



STATEMENT
OF
A PROPER MILITARY POLICY
FOR THE
UNITED STATES



PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
IN COMPLIANCE WITH INSTRUCTIONS OF THE SECRETARY OF WAR
MARCH, 1915

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WAR DEPARTMENT,
OFFICE OF THE CHIEF OF STAFF,
WAR COLLEGE DIVISION,
Washington, September 11, 1915.

Memorandum for the Chief of Staff:

Subject: Military policy.

1. Memorandums from your office, dated March 11 and March 17, 1915, directed the War College Division to make a complete and exhaustive study of a proper military policy for the United States, and to prepare a clearly and succinctly expressed statement of the policy, basing it, in a general way, upon the "Report on the Organization of the Land Forces of the United States, 1912," "eliminating everything that is not necessary for the easy and quick comprehension of the military policy, and adding anything which may be necessary to afford such comprehension."

2. The following extract from the memorandum of March 17, 1915, gives the subjects which the "statement" was to cover, viz:

The substance of this policy will, therefore, be a clearly and succinctly expressed statement, with the reasons therefor, of the recommended *strength* and *organization* of—

- I. (a) The Regular Army;
- (b) The Organized Militia.

This should be followed by—

II. A careful study of the question of a reserve for both the Regular Army and the Organized Militia and, *if possible to agree upon it*, a plan for the formation of such reserves.

III. The Volunteers: Their organization and relation to the Regular Army and the Organized Militia.

IV. Reserve material and supplies which should be available and which can not be promptly obtained if delayed till the outbreak of war.

The Secretary of War is of the opinion that a statement which shall contain everything that is pertinent to the foregoing subjects will inform Congress of all the *essential* things that the best judgment of the War Department thinks it is justified in asking Congress to provide in peace and to be prepared to provide in war. These things, being such as commend themselves to the general military intelligence (if they do not so commend themselves there can be no policy such as is now aimed at), may be assumed to be those that will be asked for by succeeding administrations of the War Department—at least, they will indicate the general line of development to be pursued. Such a statement will constitute what he has in mind as a comprehensive military policy.

There are many other things that will from time to time be asked of Congress or, when authority exists for it, that will be done without asking legislation. Such things may be requests for appropriations to build new posts in view of the abandoning of others; the concentration of the Army in a smaller number of posts in definite areas of the country; projects for promotion, retirement, etc.; plans for training the Army and the militia, etc.

Such things have no part in the statement of a general military policy which the Secretary of War now desires to have prepared, and in order to save time

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and labor and to concentrate attention upon that which is essential, he desires any such extraneous matter to be eliminated from the study which he has directed.

3. Following these lines the accompanying "Statement of a Proper Military Policy for the United States" was prepared.

4. It is proposed to supplement this statement later with brochures on such subjects as require more detailed discussion than would be appropriate herein.

M. M. MACOMB,

Brigadier General, Chief of War College Division.

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A PROPER MILITARY POLICY FOR THE UNITED STATES.

INTRODUCTION.

THE MILITARY PROBLEM CONFRONTING THE UNITED STATES.

1. *The evolution of national military policies.*—National policies are evolved and are expanded as the Nation grows. They reflect the national sense of responsibility and also the national ambitions. They constitute the doctrine underlying acts of statesmanship and diplomacy. A nation's military policy is the national doctrine of self-preservation. The world is never without virile, capable, and progressive nations, the circumstances of whose development have imbued them with the belief that their vital interests demand an active aggressive policy. They are forced to resort to universal service in the effort to fulfill, at any cost, what they conceive to be their destiny. In the United States the development of the Nation has proceeded under an environment so favorable that there is no well-defined public opinion in regard to what constitutes an adequate military policy. Heretofore isolation, combined with the necessity of preserving the balance of power, has been a sufficient guaranty against strong hostile expeditions from Europe or Asia. The safeguard of isolation no longer exists. The oceans, once barriers, are now easy avenues of approach by reason of the number, speed, and carrying capacity of ocean-going vessels. The increasing radii of action of the submarine, the aeroplane, and wireless telegraphy all supplement ocean transport in placing both our Atlantic and Pacific coasts within the sphere of hostile activities of oversea nations.

The great mass of the public does not yet realize the effect of these changed conditions upon our scheme of defense.

Another thing that militates against the evolution of a sound military policy for our country is the erroneous conclusion drawn by the people from our past experiences in war. In developing such a policy victory is often a less trustworthy guide than defeat. We have been plunged into many wars and have ultimately emerged successfully from each of them. The general public points to these experiences as an indication that our military policy has been and still continues to be sound. That this is not really the belief of those in authority is shown by the fact that each war of importance has been followed by an official investigation of our military system and the policy under which it operated. The reports of these investigations give a startling picture of faulty leadership, needless waste of lives and property, costly overhead charges augmented by payment

of bounties to keep up voluntary enlistments, undue prolongations of all these wars, and finally reckless expenditure of public funds for continuing pensions. These documents supply convincing proofs that all such shortcomings have been due entirely to a lack of adequate preparation for war in time of peace. But we have not yet learned our lesson. It has never been driven home by the bitterness of defeat. We have never known a Jena or a Sedan. At no stage of our national life have we been brought face to face with the armed strength of a great world power free to land sufficient forces to gain a foothold at any desired portion of our coasts. That we have to some extent felt this danger is evidenced by our efforts to provide a navy as a first line of defense and to supplement it with the necessary harbor fortifications; but we have not yet realized that our ultimate safeguard is an adequate and well-organized mobile land force. Experience in war has shown the need of these three elements but the public has not yet demanded that they be perfected, coordinated, and combined in one harmonious system of national defence. *Not until this has been accomplished will a proper military policy for the United States be adopted.*

2. *Our abiding national policies.*—The majority of our people have always believed in asserting their own rights and in respecting those of others. They desire that the cause of right should prevail and that lawlessness should be crushed out. To live up to these high ideals imposes upon us new duties as a world power; duties that require something more positive than a policy of mere passive defense. In addition, there are two underlying and abiding national policies whose maintenance we must consider as necessary to our national life. These are the "Monroe doctrine" and the policy of avoiding "entangling alliances." They are distinctive and affect our international relations in a definite manner. In addition, policies may develop in the future as a result of international relations with respect to trade conditions.

A general consideration of our responsibilities as a nation and of our geographical position indicates that the maintenance of our abiding policies and interests at home and abroad involves problems of defense measures both on land and on sea. The solution of the general problem of national defense must be sought in the provision of adequate land and sea forces and a consideration of their coordinate relationship.

3. *Coordinate relationship of Army and Navy.*—Upon the Navy devolves the solution of the problem of securing and maintaining control of the sea. To accomplish this it must be free to take the offensive promptly—that is, to seek out and defeat the enemy fleet. The use of any part of the high-sea fleet for local defense defeats the chief object of the Navy and is a misuse of naval power. A fleet defeated at sea and undefended by an adequate army is powerless either to prevent invasion or even its own ultimate destruction by combined hostile land and naval forces. In illustration compare the cases of the Spanish fleet at Santiago and the Russian fleet at Port Arthur with the present example of the German, Austrian, and Turkish fleets under the protection of land forces.

Upon the Army devolves the task of gaining and maintaining on shore the ascendancy over hostile land and naval operations. To

accomplish this it must be able to seek out promptly and to defeat, capture, or destroy the invader wherever he may attempt either to secure a footing upon our territory or to enter the waters of our harbors with the object of threatening the destruction of the seaport or of a fleet driven to seek refuge or repair therein.

The problems involved in operations against hostile land forces are complex and include only as an incident the protection of harbor defenses on the land side. The problems of harbor defense against attack from the sea are simple and passive in their nature.

4. *Coordinate relationship of statesman and soldier.*—In our country public opinion estimates the situation, statecraft shapes the policy, while the duty of executing it devolves upon the military and naval departments.

Such a doctrine is sound in direct proportion to its success in producing a military system capable of developing fighting power sufficient to meet any given national emergency, at the proper time, supported by all the resources, technical and economic, of the country, in a word—preparedness. All the other world powers of to-day have realized the necessity of maintaining highly trained and organized military and naval forces in time of peace, and all, or nearly all, are allied in powerful coalitions.

Without superiority on the sea or an adequate land force there is nothing to prevent any hostile power or coalition of powers from landing on our shores such part of its trained and disciplined troops as its available transports can carry. The time required is limited only by the average speed of its vessels and the delay necessarily consumed in embarking and disembarking.

In order that the American people can intelligently decide on a doctrine of preparedness which shall constitute the military policy of the United States, and that Congress and the Executive may be able to carry out their decision, information concerning the military strength of other great nations and shipping available for transport purposes must be clearly set forth.

The work of the statesman and of the soldier and sailor are therefore coordinate; where the first leaves off the others take hold.

5. *Preparedness of the world powers for oversea expeditions.*—Control of the sea having been once gained by our adversary or adversaries, there is nothing to prevent them from dispatching an oversea expedition against us. In order to form an idea of the mobile force we should have ready to resist it an estimate must first be made of the approximate number of troops that other nations might reasonably be expected to transport and of the time required to land them on our coasts.

The number of thoroughly trained and organized troops an enemy can bring in the first and succeeding expeditions under such an assumption is a function of—

(a) The size of the enemy's army, and

(b) The number, size, and speed of the vessels of the enemy's merchant marine that can be used as transports.

Should our enemy be a nation in arms—that is, one in which all or nearly all of the male inhabitants of suitable physique are given a minimum of two years' training with the colors in time of peace (and this is true of all world powers except ourselves and England), it is

evident that the size of the first expedition and succeeding expeditions would be limited only by the number of vessels in the transport fleets. It also follows that as the capacity and number of steamers in the merchant marine of any nation or group of nations increase in the future, the number of trained soldiers which such nation could send in such expedition will also increase, and our trained forces should be correspondingly augmented.

What the conditions were in August, 1914, is shown in the following table, which may be regarded as a reasonable estimate:

Preparedness of the great powers for over-sea expeditions.

Nation.	Strength of army.	³ Tonnage available of ships with capacity over—			First expedition using 50 per cent of tonnage given.		Second expedition using 75 per cent of tonnage given.		Time needed to—	
		3,000 tons.	2,000 tons.	1,000 tons.	Men.	Animals.	Men.	Animals.	Load and cross ocean with first expedition.	Return, load, and re-cross with second expedition.
									Days.	Days.
Austria-Hungary..	4,320,000		762,756		72,000	14,000	108,000	21,600	20.7	40.4
France.....	5,000,000		1,705,931		160,931	32,186	243,295	48,279	15.8	30.0
Germany.....	5,000,000	3,569,962	4,018,185		⁴ 387,000	⁴ 81,270	⁴ 440,000	⁴ 94,600	15.8	30.8
Great Britain.....	¹ 695,000	13,000,000			170,000	90,000			14.0	27.0
Italy.....	2,600,000		1,065,321		91,000	13,650	136,000	20,475	18.3	35.0
Japan.....	2,212,000			² 1,013,985	95,745	24,416	142,622	36,623	22.5	41.0
Russia.....	5,000,000		428,019		37,630	7,940	66,444	11,918	20.5	40.0

¹ 240,500 territorials.

² Japanese field regulations indicate the intention to use steamers of 1,000 tons; for this reason and because of the large amount of steamers between 10 and 12 knots speed, all Japanese steamers over 10 knots speed and a thousand tons gross have been considered.

³ Fifty per cent has been assumed as the figure representing the amount of shipping in or within call of home ports at outbreak of war.

⁴ Using no ships less than 3,000 tons.

NOTE.—The allowance prescribed in our Field Service Regulations of 3 tons per man and 8 tons per animal for ships over 5,000 tons and 4 tons per man and 10 tons per animal for vessels under 5,000 tons has been used in estimating the capacity of ships, except where the regulations of any country prescribe a different allowance. These allowances include rations, water, forage, etc., for the voyage and a margin for three months' reserve supplies. The tonnage allowance covers men, animals, and all accessories and is sufficient to provide for vehicles (including guns).

Fighting power is the result of organization, training, and equipment backed by the resources of the country. Available shipping is a matter of commercial statistics.

The quality, organization, and efficiency of these troops, except those of Japan, which demonstrated their excellence in the Russo-Japanese War, are now undergoing a supreme test of military strength on land and sea. This test by the ordeal of battle is visibly demonstrating their organization, their fighting power, and the rate at which each is capable of developing and maintaining its military strength. In addition, where certain nations have transported troops by sea their capabilities in this respect have to some extent been shown.

This evidence, produced under conditions of actual warfare, presents an example of the resultant efficiency of any nation that has developed a sound military policy; the soundest policy being the one which insures a successful termination of the war in the shortest time.

6. *Statement of the military problem.*—From what has been stated, we are forced to the conclusion that we must be prepared to resist a combined land and sea operation of formidable strength. Our principal coast cities and important harbors have already been protected by harbor defenses which, by passive method alone, can deny to an enemy the use of *these localities* as bases for such expeditions.

The enemy being unable to gain a foothold in any of these fortified areas by *direct naval attack* will therefore be forced to find some suitable place on the coast from which land operations can be conducted both against the important coast cities and the rich commercial centers in the interior. Long stretches of coast line between the fortified places lie open to the enemy. The only reasonable way in which these localities can be defended is by providing a mobile land force of sufficient strength, so located that it may be thrown in at threatened points at the proper time.

It has just been shown what the strength of these expeditions might be, as well as the time required for any one of them to develop its whole effective force. Hence it can be seen, when we take into consideration the possible two months' delay provided by the Navy, that our system should be able to furnish 500,000 trained and organized mobile troops at the outbreak of the war and to have at least 500,000 more available within 90 days thereafter. Here, however, it must be pointed out that two expeditions alone will provide a force large enough to cope with our 1,000,000 mobile troops, and consequently we must at the outbreak of hostilities provide the system to raise and train, in addition, at least 500,000 troops to replace the losses and wastage in personnel incident to war. To provide this organized land force is the military problem before us for solution.

I. THE REGULAR ARMY.

GENERAL FUNCTIONS OF THE REGULAR ARMY.

7. In the endeavor to reach a just conclusion as to the strength and organization of a Regular Army, adequate to play its part in our national defense, it must not be forgotten that this defense is a joint problem requiring for its correct solution the united efforts of both Army and Navy, and that the ultimate strength of the greater war army is dependent to a considerable extent upon the part to be played by the fleet. It is therefore assumed in this discussion that the Navy is preparing to place and maintain in the Pacific, when the occasion requires, a force superior to that of any oriental nation, and, in the Atlantic, one second only to that of the greatest European naval power.

The Regular Army is the peace nucleus of the greater war army of the Nation. Its strength and organization should be determined not only by its relation to the larger force but by its own peace and war functions. It must be prepared at all times to meet sudden and special emergencies, which can not be met by the army of citizen soldiers. Its units must be the models for the organization and training of those of the great war army.

Some of the functions of the Regular Army are:

(a) To furnish the entire strength of our garrisons outside of the United States proper both in peace and war.

(b) To garrison our harbor defenses within the United States proper in time of peace.

(c) To furnish detachments of mobile forces in time of peace sufficient for the protection of these harbor defenses and naval bases against naval raids which, under modern conditions, may precede a declaration of war.

(d) To furnish sufficient mobile forces to protect our principal cities by preventing the landing of hostile expeditions for their capture in the intervals between our fortified harbors or near such cities.

(e) To supply a mobile reserve to reenforce our garrisons outside of the United States proper during periods of insurrection and disorder.

(f) To furnish expeditionary forces for minor wars resulting from the occupation of foreign territory where treaty rights or fundamental national policies may have been threatened.

(g) To prepare in advance its existing administrative and supply departments for the equipment, transportation, and supply of the great war army of the Nation.

(h) To assist in the training of organizations of citizen soldiers.

8. Concerning the strength and organization of the Regular Army, the following points are to be considered:

(a) At the outbreak of war the Regular Army at home should be strong enough, with the addition of organized and trained citizen soldiers, to form the first line of defense in order to give sufficient time to permit the mobilization and concentration of our greater war army, and to seize opportunities for such immediate initial operations as may be undertaken before the mobilization of the army of citizen soldiers can be completed.

(b) It should be so organized and located that it can be economically and efficiently trained, quickly and easily mobilized and concentrated, and readily used as a model in the education and training of the citizen forces.

MOBILE AND COAST ARTILLERY TROOPS AND THEIR FUNCTIONS.

9. Experience has shown that our regular land forces and others modeled upon them must consist of two distinct classes, i. e.:

(a) Mobile troops.

(b) Coast Artillery troops.

These two groups have their own special functions for which they are trained and equipped and from which they should not be diverted except in some emergency.

The function of the Coast Artillery is to man our harbor defenses designed to protect important seaports from direct naval attacks and raids from the sea. The armament and accessories of these forts are intended to be so complete and powerful as not only to prevent hostile landings at all places within range of the guns, but also to cover all navigable waters in the vicinity of great seacoast cities so thoroughly as to leave no dead spaces from which enemy ships, either at anchor or during a run-by, could bring them under bombardment. While these harbor forts are important elements in our scheme of defense, they are, nevertheless, powerless to prevent invasion at points outside the range of their guns. The total length of our coast

line is enormous, and the stretches covered by harbor defenses are and must remain very small compared with the unprotected intervals that lie between them. If we should lose command of the sea an invader would simply land in one of these intervals. It therefore follows that the ultimate defense of our coasts depends upon defeating a mobile army of invasion, and this can be done only by having mobile forces prepared to operate in any possible theater of war. At this stage of hostilities the problem becomes one of cooperation between Coast Artillery and mobile troops, but there can be no fixed relation in the strength of these two classes of land forces. The necessary strength of Coast Artillery troops depends upon the number and character of harbor defenses established; that of mobile troops upon the nature and extent of the defensive and offensive operations for which the Nation decides to be prepared.

RELATION BETWEEN HOME AND OVERSEA GARRISONS.

10. The most rational method of determining the proper strength and organization of the Regular Army is based upon the fact that this force is and must be divided into two distinct parts—one for oversea service, the other for home service. Each of these parts must have its proper quota, both of mobile and Coast Artillery troops.

The troops on oversea service consist of the detachments required to meet the special military problems of the Philippines, Oahu, Panama, Alaska, Guantanamo, and Porto Rico. Each of these detachments has a distinct tactical and strategic mission, and is to operate within a restricted terrain. All of them are limited to oversea communication with the home country, and all of them may therefore be isolated for considerable periods, especially in the critical first stages of war. It is obvious that under these circumstances these detachments should be prepared to meet all military emergencies until reinforcements from the United States can reasonably be expected. They must, therefore, be maintained at all times at full statutory strength, and must, in addition, be organized with the view to being self-supporting, preferably during the continuance of war, or at least until the Navy has accomplished its primary mission of securing the command of the sea.

The force at home is on an entirely different basis. It may or may not be given an adequate number of units in time of peace, but it is supported by all of the resources of the Nation. It may be increased at the pleasure of Congress, and it may be reenforced by considerable forces of citizen soldiery. It follows from these considerations that the military establishment of the United States in time of peace should first provide effective and sufficient garrisons for the political and strategic outposts of the United States, and that the residue at home should be organized with the view to ultimate expansion into such war forces as national interests may require. The possibility of a satisfactory mobilization of this home force is dependent upon keeping the units of the regular contingent at full statutory strength.

GENERAL REQUIREMENTS OF OVERSEA SERVICE.

11. *The Philippines.*—A decision to defend the Philippines against a foreign enemy is a matter of national and not of military policy.

But in studying the military requirements of such defense it must be remembered that, under conditions of modern warfare, unless our Navy has undisputed control of the sea, we can not reenforce the peace garrison after a declaration of war or while war is imminent.

12. *Oahu*.—The maintenance of the naval base at Pearl Harbor, Oahu, is an essential factor in the military problem of holding the Hawaiian Islands. These islands constitute a vital element in the defense of the Pacific coast and in securing to ourselves the full value of the Panama Canal as a strategic highway between the two oceans.

The problem of holding the Hawaiian Islands can be solved by making Oahu, and therefore Pearl Harbor, secure against all comers. A satisfactory solution requires the joint action of the Army and Navy. Pearl Harbor and Honolulu are already protected from direct naval attack by fortifications now nearing completion. These, while deemed adequate to meet the conditions existing when they were designed, must now be strengthened to meet the recent increase in power of guns afloat; but no matter how complete these harbor fortifications on the southern coast of Oahu may be, they are unable to prevent attacks either on the remaining hundred miles of coast lying beyond the range of their guns or on the other islands of the group. Consequently there should be in addition a force of modern submarines and destroyers forming part of the permanent naval equipment of Pearl Harbor with sufficient radius of action to keep the Hawaiian waters thoroughly patrolled throughout their whole extent and to make them dangerous for enemy vessels. Should this force be worsted in combat and withdrawn before the arrival of our high-sea fleet, the complete control of the local waters might pass temporarily to the enemy, so that the ultimate security of both Honolulu, the naval base at Pearl Harbor, and indeed of the whole group, depends upon including in the Oahu garrison enough mobile troops to defeat any enemy that may land anywhere on the island. It is clear that perfect coordination between the Army and Navy at this station is absolutely essential to success in holding this key to the Pacific. Unless we provide such dual defense of the Hawaiian Islands we can not be sure of retaining control even of that part of the Pacific lying within the sphere of defense of our western coast. By making such provision the high-sea fleet is left free to seek out the enemy fleet in Pacific waters.

13. *Panama*.—The Panama Canal is a very important strategic position which it is our duty to hold. By our control of this highway between the two oceans the effectiveness of our fleet and our general military power is enormously increased. It is therefore obvious that the unquestioned security of the canal is for us a vital military need. The permanent garrison should be strong enough to guard the locks, spillways, and other important works and to prevent a naval attack which, under modern conditions, may even precede a declaration of war. We should therefore be able, even in peace, to man the seacoast guns and mine defense that cover the approach to the canal, and we must have enough mobile troops to defeat raids. A modern fleet might land a small raiding party of several thousand bluejackets at any one or more of a number of places, and such a force landing out of range of the seacoast guns could, if unopposed, penetrate to some vulnerable part of the canal within a few hours. The permanent garrison should therefore include a mobile force strong enough to

anticipate and defeat naval raids at the beginning of hostilities and to protect the canal against more serious land operations liable to be undertaken later. If the enemy is operating on one ocean only, it might be possible to send reinforcements from the United States, but to count on such relief would be running too great chances. By authority of the Republic of Panama, this garrison is given facilities in time of peace to operate beyond the Canal Zone in order that the troops may be properly trained for their special mission and made familiar with the terrain over which they may be called upon to operate in defending the canal.

14. *Guantanamo*.—The policy of the United States contemplates the establishment of a naval base at Guantanamo. Garrisons of coast artillery and mobile troops are necessary for its defense and should be assigned to station there at the proper time.

15. *Alaska*.—The garrison of Alaska should be large enough to support the authority of the United States, and, in time of war, to maintain our sovereignty over a small selected area of the Territory. As work on the Alaskan Railroad progresses, the military needs of Alaska will increase.

16. *Porto Rico* is to be classified with the Philippines and Guam. Unlike Alaska and Hawaii, these island possessions have not been organized as Territories; nevertheless, they all belong to the United States and must be protected.

GENERAL REQUIREMENTS OF HOME SERVICE.

17. *General distribution of Coast Artillery troops in fortified areas*.—It has already been shown where we should have garrisons for oversea service and why. It now remains to show how we should distribute our regular troops for service at home. Coast Artillery stations should correspond to the fortified areas on the seacoast, and these are indicated by the position of the harbor defenses, which are at present located as follows:

Portland, Me.	The Potomac.	New Orleans.
Portsmouth, N. H.	Chesapeake Bay.	Galveston.
Boston.	Cape Fear.	San Diego.
New Bedford.	Charleston.	Los Angeles.
Narragansett Bay.	Savannah.	San Francisco.
Long Island Sound.	Tampa.	Puget Sound.
New York.	Key West.	The Columbia.
The Delaware.	Pensacola.	
Baltimore.	Mobile.	

18. *General distribution of mobile troops in strategic areas*.—As previously explained, the influence of harbor defenses is limited to the areas within the range of their guns. To provide harbor defenses without mobile forces necessary to cover the unprotected intervals that lie between them would be comparable with attempting to make a house burglar proof by barring the doors and leaving the windows open. There is not a case in history where seacoast fortifications, efficiently manned, have been captured by direct attack from the sea. In all cases of capture mobile land forces have been employed for the purpose, and an enemy that hopes for success must undertake landing operations against us. We must therefore decide upon a rational distribution of our mobile forces to meet this contingency.

19. *Puget Sound area.*—Western Washington is bordered on the east by the steep and rugged Cascade Mountains, on the south by the Columbia River, and on the north by Juan de Fuca Strait and Canada. This corner of the United States is completely cut off from the rest of the country by great natural obstacles and presents an extensive front for attack by sea. While the maps show some twenty passes across the Cascade Mountains, communication with the east is almost entirely by three railroads, all crossing at points less than 50 miles apart and having tunnels or other vulnerable structures. The only practicable wagon road is effectually closed to traffic for between four and five months each year by heavy snows. Communication with the south is by one line of railroad, crossing the Columbia River by bridge at Vancouver. Communication between this section and the east and south is thus largely dependent upon a number of structures readily destroyed by high explosives, and impossible of restoration to traffic within a definite time. The two railroads along the Columbia River, at the point where it breaks through the mountains, could be easily wrecked so as to require considerable time to repair, and the gorge could be held by a small force against a large one coming from the east. If an enemy succeeds in entering western Washington and in seizing and destroying the important bridges and tunnels, he would be so securely established as to render it extremely difficult to dislodge him. In this rich region an invader could maintain himself indefinitely. The harbor defenses maintained in this region are reasonably strong. Ordinary precaution demands that a mobile force of reasonable strength be also maintained in this region.

20. *California area.*—There are five transcontinental lines of railway entering California. The Western Pacific and Southern Pacific by the passes through the Sierras northeast of Sacramento; the Atchison, Topeka & Santa Fe, and the San Pedro, Los Angeles & Salt Lake via Daggetts Pass northeast of Los Angeles; and the Southern Pacific via the Salton Sea and Gorgonia Pass southeast of Los Angeles. There are no other passes through the Sierras that have been considered practicable. There is no railroad running south into Lower California. Only one railroad, the Southern Pacific, runs north into Oregon. As in the Puget Sound region, communication with the east is largely dependent upon structures readily destroyed by explosives and impossible of restoration to traffic within a definite time; California and the greater centers of population are separated by wide expanses of sparsely settled country. To transport promptly large bodies of troops into California would be difficult if not impossible in face of opposition at the passes. The invader would have a most fertile region at his back, while the reverse would be the situation with us.

The harbor defenses maintained in this region are reasonably strong, but they are of little use unless supported by a reasonably strong mobile force maintained in this region.

To rely, for defense, during the first stages of a war upon a mobile force shipped in from the east is to invite disaster.

21. *Atlantic area.*—In case of war with a first-class power on the Atlantic, that portion of our country lying between and including Maine and Virginia would undoubtedly be the primary object of an invader. While all other points along the Atlantic and Gulf coasts

and all points on our land frontiers would undoubtedly be in danger, the danger would be secondary to that of the North Atlantic States above named. Here, also, the harbor defenses are reasonably strong, and here also, a mobile force should be kept sufficient in size to hold important points until the citizen soldiery can be mobilized.

While many other regions are important, the three regions described—Puget Sound, California, and the North Atlantic States—contain the critical areas.

22. *Middle West area.*—The center of population of the United States is in the middle west, and here should be located a mobile force for use in case of need, on either the Pacific or Atlantic coast, the northern or southern border.

NECESSARY STRENGTH OF MOBILE TROOPS FOR OVERSEA SERVICE.

23. Constant study of the problem which confronts each of our oversea garrisons in connection with the advance made in arms, transportation, tactics, lines of information, methods of communications, undersea craft, and aerial operations, has led to the conclusions that the strength of the oversea garrisons, herein given is the minimum below which they should not be allowed to fall at any time.

The general requirements of oversea service have already been stated for each of the several localities concerned. It now remains to determine the necessary strength to meet these requirements, taking up each case in turn.

24. *The Philippines.*—If in accordance with national policy it is decided to keep the American flag flying in the Philippines in war as in peace it becomes essential to hold Manila Bay.

25. *Oahu.*—Having in mind the principles governing the relations between home and oversea garrisons, the force maintained at all times in Oahu should include:

- 9 regiments of Infantry (3 brigades).
- 1 regiment of Cavalry.
- 2 regiments of Field Artillery.
- 2 battalions Engineers; 1 field battalion of Signal troops; 1 aero squadron; 1 telegraph company.
- 2 ambulance companies.
- 14 companies Coast Artillery.

This force will total about 25,000 combatant officers and men.

26. *Panama.*—The force maintained at all times in the Canal Zone should include:

- 9 regiments of Infantry (3 brigades).
- 1 regiment of Cavalry.
- 1 regiment of Field Artillery.
- 2 battalions of Engineers; 1 field battalion Signal troops; 1 aero squadron; 1 telegraph company.
- 1 ambulance company; 1 evacuation hospital.
- 21 companies Coast Artillery Corps.

This force will total about 24,000 combatant officers and men.

27. *Guantanamo.*—The policy of the United States contemplates the establishment of a naval base at Guantanamo. Garrisons of Coast Artillery and mobile troops are necessary for its defense and should be assigned to station there at the proper time.

28. *Alaska*.—The garrison of Alaska should be large enough to support the authority of the United States and, in time of war, to maintain our sovereignty over a small selected area of the Territory. As work on the Alaskan Railroad progresses the military needs of Alaska will increase.

In time of peace it is believed that the Alaskan garrison should be one regiment of Infantry (1,915 officers and men), to be increased later as circumstances may demand.

29. *Porto Rico*.—The present garrison, reorganized into a full regiment of three battalions, etc., is sufficient (1,915 officers and men).

30. The following table gives a summary of the minimum garrison to be maintained on over-sea service:

Table of garrisons for over-sea stations.

Localities.	Regi-ments of Infantry.	Regi-ments of Cavalry.	Batteries of Field Artillery.	Battal-ions of Engi-neers.	Battal-ions, Signal Corps. ¹	Aero squad-rons.	Compa-nies of Coast Artillery Corps.
Philippines.....	9	3	18	² 1½	1½	1	26
Oahu.....	9	1	12	2	1½	1	14
Panama.....	9	1	6	2	1½	1	21
Alaska.....	1						
Porto Rico.....	³ 1						
Total.....	29	5	36	5½	4½	3	61

¹ Includes 1 telegraph company in each garrison.

² 1 company mounted for Cavalry brigade.

³ Native.

Combatants—

Officers and men.

Mobile..... 74,500

Coast Artillery Corps..... 7,500

Total..... 82,000

NECESSARY STRENGTH OF MOBILE TROOPS FOR HOME SERVICE.

31. Careful studies made at the War College, extending over a period of years, lead to the conclusion that the strength of the Infantry, Cavalry, Field Artillery, Engineers, and signal troops of the Regular Army maintained at home in time of peace, and the distribution of administrative units of these arms in the principal strategic areas, should be as given in the following table:

Combatant troops.

Localities.	Infantry regiment.	Cavalry regiment.	Field Artillery regiment.	Engi-ner bat-talions.	Bat-talions Signal Corps.	Aero squad-rons.
Puget Sound area.....	9	3	¹ 3½	21	¹ 1½	1
California.....	9	4	3½	2½	1½	1
North Atlantic States.....	9	4	3½	2½	1½	1
Middle West.....	9	3	3½	2½	1½	1
Mexican border.....		6	1	5	1	1
Total.....	36	20	15	10	7	5

¹ Each Cavalry brigade to have 1 battalion horse artillery; 1 company mounted Engineers; 1 company Signal Corps.

Approximate total, 121,000 officers and men.

These troops should be organized in higher tactical units and distributed in strategic areas substantially as follows:

Puget Sound area.....	One division (less divisional Cavalry) and one Cavalry brigade (of 3 regiments).
California.....	One division and one Cavalry brigade.
North Atlantic States.....	One division and one Cavalry brigade.
Middle West.....	One division (less divisional Cavalry) and one Cavalry brigade.
Mexican border—	
West of El Paso.....	One Cavalry brigade.
East of El Paso.....	One Cavalry brigade.

NECESSARY STRENGTH OF COAST ARTILLERY TROOPS REQUIRED FOR SERVICE OVERSEAS AND AT HOME.

32. The strength of the Coast Artillery depends upon the number of guns and mine fields installed and projected and upon the assistance to be received from Organized Militia units. An estimate prepared in the Office of the Chief of Coast Artillery¹ gives the following strength, in companies, required under the supposition that all mine fields and all oversea guns and one-half the guns at home are manned from the Regular Army:

	Companies.
Philippines.....	26
Oahu.....	14
Panama.....	21
United States.....	228
Total	289
Total companies (gun and mine)	289
Officers and men	34,413

TOTAL STRENGTH OF THE REGULAR TROOPS REQUIRED FOR ALL SERVICES.

33. Combining all previous estimates of Coast Artillery and mobile troops required for service in oversea garrisons and at home, the following tabular statement of the required strength of the Regular Army in units appropriate to each arm, results, viz:

Localities.	Infantry regiments.	Cavalry regiments.	Field Artillery regiments.	Coast Artillery companies.	Engineer battalions.	Signal Corps.	
						Battalions.	Aero squads.
Philippines ²	9	3	3	26	1½	1½	1
Oahu.....	9	1	2	14	2	1½	1
Canal Zone.....	9	1	1	21	2	1½	1
Alaska.....	1						
Porto Rico.....	1						
Puget Sound area.....	9	3	3½		2½	1½	1
California.....	9	4	3½		2½	1½	1
North Atlantic States.....	9	4	3½		2½	1½	1
Middle West.....	9	3	3½		2½	1½	1
Mexican border.....		6	1		3½	1	1
United States.....				228			
Total required	65	25	21	289	15½	11½	8

¹ This estimate can only be verified by an inspection of all the harbors in question, for which inspection there has not been sufficient time since this estimate was received.

² Nine regiments Infantry, 2 regiments Field Artillery, 2 battalions Engineers. Filipinos to be added, 21,000 officers and men.

These figures may be summarized as follows:

Oversea:		
Mobile (combatant) -----	74,500	
Coast Artillery Corps -----	7,500	
		82,000
In United States:		
Mobile (combatant) -----	121,000	
Coast Artillery Corps -----	27,000	
		148,000
Total:		
Mobile (combatant) -----	195,500	
Coast Artillery Corps -----	34,500	
		230,000

To this total should be added officers and men for the Sanitary; Quartermaster, Ordnance Department, etc., appropriate to a force of this strength, amounting approximately to 30,000 officers and men. Including Philippine Scouts, 21,000, the grand total becomes 281,000.

34. *Organization*.—The Tables of Organization, approved and published on February 25, 1914, for the information and government of the Regular Army and Organized Militia of the United States have been taken as the guide in estimating the numerical strength of the personnel of the various tactical and administrative units mentioned in this report. This was done as a matter of convenience and because the service generally is familiar with these tables, which are the latest official publication of the War Department on this subject. They conform to the Field Service Regulations and are the best that can be devised under the limitation of the present laws governing the Army, but it can not be too emphatically stated that *they are for emergency use only* and contain certain undesirable and unscientific features which should be corrected as soon as the necessary legislation can be obtained. For example, the war organization shown in the tables is *provisional* only, while the peace strength is arranged so as not to exceed the total enlisted strength of about 93,000 men now permitted by existing appropriations.

This limitation falls heaviest upon the Infantry, whose organizations on home service are maintained at only 43 per cent of full statutory strength, while the Cavalry organizations are maintained at 75 per cent and those of Field Artillery at 77 per cent of such strength. It is generally conceded that our Infantry companies should each have the full statutory strength of 150 men in order to permit proper training of the officers in time of peace and supply efficient fighting strength in time of war.

In consequence of the greatly reduced strength of these Infantry organizations, their efficiency is unduly decreased and overhead charges correspondingly increased.

The requirements of modern war demand that a machine-gun unit, a supply unit, and certain mounted men be attached to each regiment, and that units of various strengths be assigned to brigade and division headquarters. None of these units is authorized by law, yet all are essential. Tables of Organization, 1914, represent an effort to adapt an archaic statutory organization to modern requirements by organizing the necessary additional units, *provisionally*. This has been done by detaching from statutory organizations the personnel required. An examination of the tables will show that more than 5 per cent of the Infantry personnel authorized by Congress have

been diverted from their legitimate duty as members of statutory organizations and have been assigned to provisional units which, while necessary and essential, have only the sanction of departmental authority, and lack the efficiency which can only be given by statute. In the Cavalry more than 9 per cent are similarly diverted.

Recognizing these facts, the War College Division of the General Staff has prepared a plan for organizing on modern lines an army of the strength just shown to be necessary for the national needs. Should this plan be approved, the organization of the Regular Army, the militia, and whatever reserves are formed would proceed along the new lines.

II. THE ORGANIZED MILITIA.

35. The act of Congress approved April 25, 1914, commonly known as the volunteer law, defines the land forces of the United States as "the Regular Army, the organized land militia while in the service of the United States, and such volunteer forces as Congress may authorize."

The Organized Militia, in addition to its use as a State force, is available for use by the Federal Government, as provided in the Constitution.

36. *Constitutional functions of the Organized Militia.*—Its constitutional functions are the following:

(a) A State force to preserve order within the State limits, in order to avoid calling upon the Regular Army or the Organized Militia of other States to discharge such function.

(b) A Federal force when called forth by the President, and duly mustered as prescribed by Congress, for any of the three purposes authorized by the Constitution.

37. *Some uses of the Organized Militia as a Federal force.*—Having been called forth as militia, they may be used as follows:

(a) As Coast Artillery supports and reserves.

(b) To guard and protect certain bridges, canal locks, arsenals, depots of supplies, docks, navy yards, and other vulnerable points in the home territory.

(c) To guard lines of communication within the limits of the United States.

38. *Limitations.*—It is stated later in this report that 12 months at 150 hours per month, "is considered the minimum length of time of actual training considered necessary to prepare troops for war service." Due to constitutional limitations, Congress has not the power to fix and require such an amount of training for the Organized Militia. No force can be considered a portion of our first line whose control and training is so little subject to Federal authority in peace. No force should be considered a portion of our first line in war unless it be maintained fully organized and equipped in peace at practically war strength. This would exclude the Organized Militia from consideration for service in the first line mainly because of the impossibility of giving it in peace the training required for such function. It may be necessary to continue Federal support of the Organized Militia in order that some organized force may be immediately available for the purposes set forth in paragraphs 36 and 37.

39. *Recommendations.*—In the preparation of plans for the national defense and for the preservation of the honor and dignity of the United States, the number of troops that are deemed necessary are largely in excess of the total Regular and Militia forces available in the United States.

It is only during the existence of war, or when war is imminent, that any other forces may be raised under existing law. When Congress so authorizes the President, he may call forth volunteers.

Section 3 of the volunteer law provides that under certain conditions organizations of the Organized Militia may be received into the Volunteer Service in advance of any other organizations of the same arm or class from the same State, Territory, or District; and section 4 of the act of May 27, 1908, amending the militia law, provides that the Militia shall be called into the service in advance of any volunteer force that may be raised.

It is evident that it can not be known prior to the existence of the imminence of war what organizations, if any, of the Organized Militia will enter the volunteer service, and that no definite plans can be prepared providing for the use of such organizations, either as militia or as volunteers, until war is actually upon us.

No legislation affecting the Organized Militia is recommended beyond the repeal of all provisions of laws now in effect whereby militia or militia organizations may or must be received into the Federal service in advance of any other forces.

This recommendation is not to be construed as advocating express repeal of certain sections of existing laws relating to the Organized Militia, but as suggesting that any legislation hereafter proposed for the organization of a Federal reserve force shall contain the usual concluding section repealing all laws and parts of laws inconsistent therewith, and that such legislation be so framed as to render inconsistent with it the provisions of law just referred to.

III. RESERVES.

40. Reserves include: (a) Well-instructed soldiers of the Regular Army furloughed to what is herein termed the regular reserve, (b) citizen soldiers, (c) reserve officers.

41. *The regular reserve.*—As the United States should have a mobile force of 500,000 soldiers available at home at the outbreak of war, the Army, with the regular reserve, should amount to this strength. In order to develop the necessary regular reserve with the Army at the strength advocated in this policy, enlistments would have to be for about eight years—two with the colors and six in reserve. That would, in eight years, result in approximately the following mobile forces at home available at the outbreak of war:

(1) Mobile regular troops (combatant) with the colors.....	121,000
(2) The regular reserve.....	379,000

Total.....	500,000
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During the first weeks of war in this country the military situation will probably be critical. At that time every fully trained soldier should be put in the field. To do that with the small military establishment herein advocated it is necessary that during peace the Army

be kept at war strength, and that the regular reserve be organized and not kept back to replace losses expected during war. Such losses should be replaced from depot units.

42. *Citizen soldiers*.—In addition to the 500,000 fully trained mobile troops mentioned above, at least 500,000 more—a total of 1,000,000 men—should be prepared to take the field immediately on the outbreak of war and should have had sufficient previous military training to enable them to meet a trained enemy within three months. Twelve months' intensive training is the minimum that will prepare troops for war service. Therefore the 500,000 partly trained troops above referred to require nine months' military training before war begins. Military efficiency of reserves requires that Regular Army officers be assigned thereto for training purposes—at least one to every 400 men—and that organizations and specially designated non-commissioned officers of the Army be utilized in instructing reserves as far as practicable.

Based upon experience with Tables of Organization, 1914, the War College Division has recently prepared a new plan of organization for the Army. The Regular Army and the reserves should be organized according to this plan. Organizations should be formed of men from the districts to which their respective organizations are assigned for recruiting. For this purpose, each organization should be assigned to a district from which recruits most suitable for the service required of the organization may be obtained—mounted units to horse-raising districts, technical troops to manufacturing districts, etc. As a rule the size of districts should be about in proportion to population of the qualifications—age, etc.—required. Organizations in war should be kept at full strength from the depot units which they should have in their respective recruiting districts.

43. *Reserve officers*.—Officers for staff and organizations of reserves, and officers for temporary appointment in the Regular Army as provided for in section 8 of the volunteer law (act of Congress approved Apr. 25, 1914), should be selected and trained in time of peace. The President should be authorized to issue, by and with the advice and consent of the Senate, commissions as reserve officers to citizens of the United States who, upon examination prescribed by the Secretary of War, demonstrate their physical, mental, moral, and professional fitness therefor, and who duly obligate themselves to render military service to the United States while their commissions are valid. Such commissions should be valid five years, and renewable under such regulations regarding examinations and qualifications as the Secretary of War may from time to time prescribe.

IV. VOLUNTEERS.

44. In addition to any forces that may be maintained and trained in time of peace, provision must be made for vastly increasing such forces in time of war. These must come from the untrained body of citizens and provisions for raising them is contained in the act of Congress approved April 25, 1914.

45. This act meets the military needs for raising volunteer troops as far as concerns the enlisted personnel, except in two particulars, which are: First, that under the existing laws certain organizations

of the militia, with numbers far below the full strength, can enter the volunteer force in advance of other similar volunteer organizations from the same State; and second, no volunteers of any arm or branch can be raised until all the militia of that particular arm or branch have been called into the service of the United States. The changes necessary to remedy these defects have been set forth in paragraph 39 under the subject of the Organized Militia.

V. RESERVE MATÉRIEL.

46. Of all the features disclosed by the war in Europe none stands more clearly revealed than the power to be derived from national economic organization behind the armed forces of a nation.

47. In a war of gigantic proportions the chances of success are immeasurably lessened by wastage, abuse, and confusion. Steps should be taken looking toward a national organization of our economic and industrial resources as well as our resources in fighting men.

48. In its report the commission appointed by the President to investigate the conduct of the War Department in the War with Spain used the following language:

One of the lessons taught by the war is that the country should hereafter be in a better state of preparation for war. Testimony has been taken on this subject and suggestions have been made that large supplies of all the matériel not liable to deterioration should be kept on hand, to be continuously issued and renewed, so that in any emergency they might be available. Especially should this be the case with such supplies, equipment, and ordnance stores as are not in general use in the United States and which can not be rapidly obtained in open market.

49. The lack of such articles as shoes, wagons, harness, rifles, saddles, medical chests, and so on, will render ineffective an army just as certainly as will the lack of ammunition.

50. For the purposes of storage military supplies may be divided into four classes:

(a) Supplies that can be obtained in great quantities in the open market at any time.

(b) Those that can be obtained in sufficient quantities on 15 days' notice.

(c) Those that can be obtained on three months' notice.

(d) Those that can not be obtained within three months.

51. The War College Division of the General Staff is of the opinion that for purposes of defense we should maintain the troops enumerated in Parts I and III of this report.

52. A fully trained force, to be effective during the critical period when war is imminent and during the first few weeks of a war, must not be hampered by lack of necessary supplies and equipment. For this reason, supplies of all kinds which can not be obtained in the open market at any time must be kept on hand, in use and in store, at home and oversea, sufficient to equip without delay all troops whose training warrants sending them promptly into the field.

53. It is probable that as soon as war becomes imminent, the Continental Army—500,000 mobile troops—will also be called out. As this partially trained force can not be expected to take the field within three months' time, it is practicable to refrain, after the third year, from keeping on hand or in store for it any articles of equipment

except those necessary to complete its training and those which can not be procured within three months.

54. The total number of harbor defense troops necessary is about 50,000. Due to conditions of service, it is believed that ultimately supplies of all kinds for 60,000 should be kept on hand.

55. In any great war, volunteers must be called out in addition to the troops above enumerated.

56. It would be unwise to have on hand at the beginning of a war merely the supplies sufficient to place in the field our first contingent of troops and to complete the training of the Continental Army, and to be unprepared to supply to even a limited extent the Volunteer Army we should have to raise, not to mention replacements of arms, ammunition, clothing and equipment of all kinds for those already in the field; but on account of the great sum of money which will be necessary in entering upon a program for collecting and storing military supplies it is believed that the subject of equipment for a Volunteer Army and replacements for the Regular and Continental Armies should be provided for by obtaining options with domestic manufacturers to furnish the required supplies, all of domestic manufacture, in accordance with tentative contracts to be made by the supply departments with such manufacturers in time of peace. By so doing we will be taking the initial steps toward organizing the industrial and economic resources of the country as well as its resources in fighting men.

57. Referring to Part III, approximately the following troops will be available at the close of the successive years:

	Fully-trained mobile troops.	Partially-trained Continental Army.	Harbor-defense troops.	Total.
First year.....	160,000	185,000	30,000	375,000
Second year.....	219,000	351,000	40,000	610,000
Third year.....	320,000	500,000	50,000	870,000
Fourth year.....	383,000	500,000	52,000	935,000
Fifth year.....	439,000	500,000	54,000	993,000
Sixth year.....	489,000	500,000	56,000	1,045,000
Seventh year.....	534,000	500,000	58,000	1,092,000
Eighth year.....	574,000	500,000	60,000	1,134,000

A study of these figures and of the difficulties we have experienced in the past in the matter of supplies lead to the conclusion that the program adopted for procuring reserve supplies should be such that at the close of each year we should have in use and in store, at home and oversea, supplies of all kinds necessary to equip:

	Infantry divisions.	Cavalry divisions of 9 regiments.	Harbor-defense troops.
First year.....	13	3	30,000
Second year.....	22	5	40,000
Third year.....	32	6	50,000
Fourth year.....	34	7	52,000
Fifth year.....	36	8	54,000
Sixth year.....	37	9	56,000
Seventh year.....	38	10	58,000
Eighth year.....	40	10	60,000

The supplies acquired during the first three years should include all articles which can not be obtained in sufficient quantities on 15 days' notice, those acquired during the last five years to include only those articles which can not be obtained on three months' notice. After the eighth year the program should be extended to provide for the storing of such additional machine guns, rifles, field guns, ammunition, etc., as may be considered advisable.

58. In order that vast supplies pertaining to one supply bureau should not be secured and relatively nothing be done by other supply bureaus, supplies should be obtained progressively in complete division units.

59. In order that the efforts of the various supply bureaus may be properly coordinated by the Chief of Staff, reserve supplies should be collected in *general* supply depots located in accordance with the general principle below enumerated. Each general supply depot should be considered a place of issue in time of peace for all articles of field equipment, so that the stock on hand will be continually turned over and the machinery for the issuing and forwarding of supplies will be in operation at the outbreak of war. The commander of each general supply depot should be either a line or a staff officer specially selected by and reporting direct to the Chief of Staff or to the department commander and independent of the control of any one particular staff department but keeping in touch with all. The commander of each general supply depot should be assisted by the necessary commissioned, enlisted, and civilian personnel. Supplies for not more than three division units should be stored at any one locality. Each place selected for a reserve storehouse should be one that will be at all times under adequate military protection, where ground is available and where abundant railroad facilities exist.

60. As a general military principle, no supply depot, arsenal, nor manufacturing plant of any considerable size, supported by War Department appropriations for military purposes, should be established or maintained east of the Appalachian Mountains, west of the Cascade or Sierra Nevada Mountains, nor within 200 miles of our Canadian or Mexican borders, and steps should be taken gradually to cause to be moved depots and manufacturing plants already established in violation of this military principle.

61. The estimated cost of the field equipment of one Infantry division, Tables of Organization 1914, is as follows:

Kind of supplies.	Can be obtained in the open market in great quantities at any time.	Can be obtained on 15 days' notice.	Can be obtained on 3 months' notice.	Can not be obtained on 3 months' notice.
Signal supplies.....	\$722. 12	\$1,688. 51	\$6,030. 46	\$385,310. 26
Quartermaster supplies.....	51,983. 35	54,054. 45	3,177,083. 47	
Engineer supplies.....	1,835. 26	471. 59	7,703. 97	8,428. 95
Ordnance supplies.....	5,779. 67	7,730. 96	257,489. 89	4,164,770. 68
Medical supplies.....	10,997. 95	10,189. 63	88,861. 51	

And the estimated cost of the field equipment of one Cavalry division of nine regiments is approximately as follows:

Kind of supplies.	Can be obtained in the open market in great quantities at any time.	Can be obtained on 15 days' notice.	Can be obtained on 3 months' notice.	Can not be obtained on 3 months' notice.
Signal supplies.....	\$370.80	\$1,638.53	\$4,290.61	\$277,156.43
Quartermaster supplies.....	55,102.48	76,143.40	4,584,628.93	.....
Engineer supplies.....	1,769.59	416.53	10,885.20	3,999.45
Ordnance supplies.....	31,862.02	18,630.56	311,056.68	3,541,004.68
Medical supplies.....	13,454.99	13,060.57	108,630.36	.....

62. While the amount of money involved is large, practically all of it will remain at home, especially if every effort be made by the supply bureaus to eliminate from supply tables all articles not of domestic manufacture. It must also be kept in mind that it is cheaper to buy war supplies in time of peace than in time of war.

List of Brochures Prepared by the War College Division, General Staff Corps, as Supplements to the Statement of a Proper Military Policy for the United States.

NOVEMBER, 1915.

Doc.
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506. Changes in organization found necessary during progress of the European War. WCD 4886-23.
507. Comparison of cost of our military establishment with those of other countries. WCD 9053-120.
508. Coordination of the mobile and coast artillery units of the army in the national defense. WCD 8911-9.
509. Development of large caliber mobile artillery and machine guns in the present European War. WCD 9239-1.
510. Educational institutions giving military training as a source for a supply of reserve officers for a national army. WCD 9053-121.
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516. Militia as organized under the Constitution and its value to the Nation as a military asset. WCD 7835-9.
517. Mobilization of industries and utilization of the commercial and industrial resources of the country for war purposes in emergency. WCD 8121-45.
518. Modern organization for the Regular Army and its use as a model in organizing other forces. WCD 9302-1.
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522. Organization, training, and mobilization of a reserve for the Regular Army. WCD 8106-15.
523. Organization, training, and mobilization of volunteers under the act of April 25, 1914. WCD 8160-25.
524. Outline of plan for military training in public schools of the United States. WCD 9064-16.
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528. Proper relationship between the army and the press in war. WCD 8976-6.
529. Recruitment of officers in time of peace in the principal armies of Europe. WCD 9278-1.
530. Standardization of methods of military instruction at schools and colleges in the United States, with draft of a bill to establish a Reserve Officers' Training Corps. WCD 9089-8.
531. Statistical comparison of universal and voluntary service. WCD 4886-25.
532. Strategic location of military depots, arsenals, and manufacturing plants in the United States. WCD 8121-42.
533. Sanitary troops in foreign armies. WCD 9319-1.
534. Training of forces of belligerent nations of Europe. WCD 9289-1.
535. Utilization of our resources in various means of transportation and of the services of trained specialists. WCD 9053-111.





CHANGES IN ORGANIZATION FOUND NECESSARY DURING PROGRESS OF THE EUROPEAN WAR

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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SYNOPSIS

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CHANGES IN ORGANIZATION FOUND NECESSARY DURING PROGRESS OF THE EUROPEAN WAR.

I. INTRODUCTION.

It is not to be expected that all of the changes in organization found necessary during the progress of the European war to date can be ascertained, nor that all the details of such changes as are known can be accurately stated. This for the reasons that such matters are not willingly divulged by belligerent nations, and that facilities for obtaining this information differ with the several countries concerned. Definite and full information on this subject can not be expected until after the close of the war.

Such changes as have been ascertained may be attributed to primary causes as follows:

(a) The unusual magnitude of the war and the immense terrain covered, calling for the solution of unusual problems in logistics and the formation of higher units in armies that have been abnormally expanded.

(b) The first application of the science of aeronautics in any war.

(c) The increased use of field artillery and the introduction of armament of larger calibers heretofore not considered mobile or even movable.

(d) The increased importance and use of machine guns.

(e) The improvement and increased use of mechanical transport.

(f) Changes due to faulty organization discovered by countries not well prepared before the war.

Even with due allowance made for perhaps greater facilities of information, and incomplete returns from other countries, Great Britain seems to have found more changes necessary than have probably been made in any other country, due, as was to be expected, from too small a standing army in peace, and too much dependence upon raising untrained volunteer armies after war began.

1. AUSTRIA-HUNGARY.

By decree of the War Office of June 8, 1914, the following changes in organization of troops was to be completed by March 1, 1915:

CHASSEURS.

The fourth company of each battalion, formerly converted into a cyclist company, was to be reestablished.

CAVALRY.

Regiments of the common army consist of 6 troops of 150 men each.

Uhlán regiments, heretofore having only 5 troops, increased to 6 troops each.

FIELD ARTILLERY.

(a) Brigade headquarters established for the existing 14 brigades of field artillery. Field gun regiments reduced from 5 to 4 batteries—the fifth battery transferred to raise other regiments to same strength.

(b) A horse artillery division ($1\frac{1}{2}$ regiments) of 3 batteries to be organized.

(c) Heavy field artillery divisions increased from 2 batteries to 3 batteries.

(d) Siege artillery, formerly organized as 6 regiments and 10 separate battalions, of 4 companies each. Two siege artillery brigade headquarters organized. A seventh regimental siege artillery headquarters organized. One siege artillery regiment increased from 6 to 8 companies.

The field artillery has a makeshift organization at present, due to large increase in number of guns per 1,000 rifles, and of so many types and characters. Six guns to 1,000 rifles are now provided, but many are of obsolete pattern. Some regiments now have as many as 12 batteries. Many of their batteries now have only 4 guns. Batteries have only 1 caisson per gun. The 4 ammunition trains are to be reduced to 2, and use motor trucks in place of the 2 in rear, i. e., 2-horsed ammunition trains (1 caisson for each gun), and 1 motor-truck train carrying the equivalent of 2 caissons per gun.

DIVISIONAL AND CORPS ARTILLERY.

Each landwehr infantry division provided with a brigade of field artillery commanded by a major general, and consists of 2 regiments—1 field-gun regiment (4 batteries), and 1 field-howitzer regiment (4 batteries). Each battery, 6 pieces.

Landwehr divisions have the same strength in artillery as those of the common army, namely, 60 guns, including the corps artillery.

ENGINEER TROOPS.

(a) Sapper battalions increased from 3 to 4 companies each.

(b) A cadre for an experimental sapper battalion established.

COMMUNICATION TROOPS.

- (a) A telegraph regiment of 4 battalions of 4 companies formed from peace cadre.
- (b) An additional regiment of railway troops formed.

CAVALRY PONTON TRAINS.

Each cavalry troop division provided with a ponton train of four 6-horse vehicles and 36 pioneers for crossing rivers by boat, or bridges of a length of 18 to 50 meters—18 meters of “riding” bridge, or 50 meters of “walking” bridge. The pioneer section taken from one of the 4 regiments forming the division.

AVIATION CORPS.

Proposed organization into a brigade of 2 regiments of the 16 companies, with 2 additional companies being organized. Formerly not organized into battalions or higher units.

AERO COMPANY.

(Four flying machines in service and 4 in reserve.)

Captain; field pilots (2 officers and 2 noncommissioned officers); observers (3 to 4 officers); 2 noncommissioned officers; 1 photographer; 5 chauffeurs, flying; 12 machinists; 2 property men; 4 workmen; 5 chauffeurs, auto; 50 train soldiers, 20 to 30 guards (attached); total, 7 to 8 officers, 39 enlisted.

Wireless now installed on flying machines. Current generated by dynamo driven by belt connection with propellers. Sending instrument in observer's compartment. Antennæ, 3 multiple wires—2 extended from tip of tail to wing tips and third carried on reel and payed out after rising, with plumb-bob to hold it free from machine.

Latest flying machines are armored with steel to protect against rifle and shrapnel bullets when flying at 1,200 meters or higher. Armor covers entire body occupied by crew and motor.

SIGNAL TROOPS.

Material increase in allotment of signal troops since war began.

(a) *Field telegraph platoon* (4 sections) consists of 5 officers, 135 enlisted, 60 horses, 5 station wagons, and 11 material wagons.

(b) *Corps telephone platoon* (4 sections) consists of 3 officers, 50 enlisted, 20 horses, 9 station wagons, and 9 material wagons.

(c) *Division telephone platoon* (2 sections) consists of 3 officers, 90 enlisted, 23 horses, 5 station wagons, and 5 material wagons.

Infantry companies, artillery batteries, pioneer, and railway companies equipped with telephones.

Cavalry regiments equipped with telegraph instruments.

(d) *Assignment to higher units.*

	Telegraph stations.	Telephone stations.	Visual stations.	Telegraph wire.	Telephone wire.
				<i>Kilometers.</i>	<i>Kilometers.</i>
Superior command.....	8	.....	.....	80	.....
Field army.....	16	.....	.....	160	.....
Corps.....	8	8	1	80	80
Infantry division.....	.....	4	4	.....	40
Cavalry division.....	8	.....	1	80	.....
Mountain brigade.....	.....	6	6	.....	40
Mountain Infantry division.....	6	4	4	40	40

To the field army is assigned a special platoon, for repairs, as a reserve, and to handle special equipment.

In principle, each subdivision connects up with the next higher command. In practice, when possible, aid is given the next lower command.

MOBILE AUTOMOBILE REPAIR SHOP.

One or two for each field army.

Organization increased by 16 additional enlisted specialists.

New features added to equipment of latest type; second dynamo and gasoline engine added, electric lighting apparatus extended, windlass turned by auto motor.

MACHINE-GUN ORGANIZATIONS.

(a) *Infantry*.—Each battalion has a platoon of 4 machine guns instead of 2 provided before the war began. In practice, organizations gather in all the machine guns they can. To keep the troops supplied with machine guns in working order, a repair and supply depot is maintained at the advance depot, where guns are issued and repaired, pack saddles and other equipment exchanged or replaced.

(b) *Cavalry*.—Each regiment has a machine-gun platoon of 4 guns, formerly the allowance for a cavalry division of 4 regiments.

2. FRANCE.

HEAVY MOVABLE ARTILLERY.

Organization not known.

Armament: 305-millimeter (12-inch) navy gun, mounted on and fired from specially constructed railroad car. Projectile weighs 348 kilos (767 pounds), with 108 kilos (238 pounds) bursting charge.

Six such guns said to have been completed or under construction.

SCHNEIDER MOBILE BATTERY.

Organization not known.

Armament: 2 howitzers, caliber 200 millimeters (7.9-inch), each mounted on and fired from a truck carriage, an ammunition carriage and a carriage for the personnel, with an apparatus for observation (a sort of mast). Together this forms a train of 4 carriages that a locomotive can draw on a normal line.

CAVALRY.

Cavalry of all kinds, for service as infantry in trenches, is provided with bayonets for their carbines. The lance is still retained for cavalry service proper.

Each cavalry division in addition to its 6 regiments, 400 cyclists, and 3 batteries of artillery, has a "light group" of 1,000 dismounted men, intended to accompany the cavalry, usually in automobiles.

Each cavalry regiment has a machine-gun section of 2 guns drawn by horses.

Each army has from 4 to 6 veterinary hospitals.

3. GERMANY.**THE 42-CENTIMETER HOWITZER BATTERY (KRUPP).**

Organization not reported.

Armament: 42-centimeter (16.5-inch) howitzer, mounted on carriages hauled by motor tractors, loaded wagons average 15 tons; motor tractors also 15-ton. Shell weighs 820 kilograms (1,800 pounds). Most effective range 9,400 meters. Used as heavy field artillery.

DEPOT BATTALIONS.

Originally designed to complete and supply personnel for and replace wastage in 3 regiments; have, since the war began, been expanded to maintain 4 to 6 regiments each.

AERO COMPANIES.

Equipped with 6 flying machines.

Officers are observers and pilots. But noncommissioned officers are trained as pilots for replacement of casualties.

All mechanical transport.

AUTOMOBILE PARK.

(Repair shop—fixed and mobile.)

Personnel: 1 captain (taken from the railway regiments), 2 lieutenants (1 from the cavalry and 1 from the artillery) and about 400 men (from recruit depots, most of them skilled workmen).

Plant (fixed): Buildings arranged on a rectangle including carpenter, painting and glazing, machine, vulcanizing, blacksmith and oxy-acetylene welding shops; (mobile): inclosed motor trucks, parked, and contain repair shops and appliances which follow the movements of an army.

New organization.

4. GREAT BRITAIN.**A. General and Army Headquarters.****GENERAL HEADQUARTERS (THREE ECHELONS).**

First echelon:

Personnel: 36 officers, 25 clerks, 91 rank and file; total, 152.

Transport: 8 motor cars, 3 motor vans (for G. S., A. G., Q. M. G., any pay branches). Total vehicles, 11.

Second echelon:

Personnel: 4 officers, 36 enlisted; total, 40.

Transport: 1 bicycle, 3 motor cars, 1 cart, 1 motor van (P. O. and medical branches); total vehicles, 6.

Third echelon (Adjutant general's office):

Personnel: 29 officers, 229 clerks, 31 rank and file; total, 289.

Transport: 1 motor car.

Organization materially changed.

HEADQUARTERS OF AN ARMY (TWO OR MORE DIVISIONS).

Personnel: 19 officers, 73 enlisted; total 92. (If at some distance from general headquarters, or on separate lines of communication, an extra G. S. officer added for censorship work.)

Transport: 1 bicycle, 6 motor cars (1 for chaplain), 2 motor vans (medical equipment and baggage).

New organization connected with general headquarters.

GENERAL HEADQUARTERS AMMUNITION PARK.

(One mechanical transport company, A. S. C.)

Army service corps personnel: 7 officers, 366 enlisted; total, 373.

Artillery attached personnel: 1 officer, 115 enlisted; total, 116.

Grand total, 489.

Transport: 4 motor cars, 8 motorcycles (3 with side cars), 3 lorries (workshop), 3 lorries (store), 125 lorries, 3-ton (4 first-aid, 16 spare, 105 ammunition); total vehicles, 143.

Capacity of a 3-ton lorry: 225 rounds of 18-pounder, or 120 rounds 4.5-inch, or 80 rounds 4.7-inch, or 90 rounds 60-pounder, or 80,000 small-arms ammunition.

New organization.

A PRINTING COMPANY.

Headquarters, general headquarters section, inspector general of communications section, and army section (1 for each army).

Personnel: 1 officer (headquarters), and 1 (for each army), 2 enlisted (headquarters), 17 enlisted (general headquarters section), 5 enlisted (I.-G. C. section), 14 enlisted (each army).

Transport: 1 motor car for photographic equipment and 1 lorry, 3-ton, each army section for printing and lithographic equipment.

Organization materially changed.

B. Army and Corps Headquarters.

HEADQUARTERS OF AN ARMY (TWO OR MORE CORPS).

Personnel: 31 officers, 106 enlisted; total, 137.

Transport: 8 motor cars, 1 motor lorry (for electric-lighting apparatus), 2 motor vans (medical equipment, baggage, etc.); total vehicles, 11.

New organization.

HEADQUARTERS OF AN ARMY CORPS (TWO OR MORE DIVISIONS).

Personnel: 17 officers, 72 enlisted; total, 89.

Transport: 5 motor cars, 1 motor lorry (for electric-lighting apparatus), 2 motor vans (medical equipment, baggage, etc.).

New organization. Similar to former army headquarters.

ARMY TROOPS SUPPLY COLUMN (PROVISIONAL).

Personnel: 3 officers, 56 enlisted; total, 59.

Transport: 1 motor car, 1 motorcycle, 5 lorries, 30-hundredweight, 1 lorry (workshop), 1 lorry (store).

New organization.

CORPS TROOPS SUPPLY COLUMN.

Personnel: 5 officers, 68 enlisted; total, 73.

Transport: 2 motor cars, 2 motorcycles, 6 lorries, 3-ton, 2 lorries, 30-hundredweight, 1 lorry (workshop), 1 lorry (store).

New organization.

THE CAVALRY CORPS.

As originally organized the cavalry of the expeditionary force, exclusive of the divisional cavalry, consisted of 1 division of 4 brigades, and 1 brigade (the fifth) in addition.

This has been changed to a cavalry corps of 3 divisions of 3 brigades each. The 3-brigade division was found from experience to be a handier and more mobile command unit than the 4-brigade division.

CAVALRY CORPS TROOPS.

One squadron of cavalry for headquarters duty; one signal squadron for intercommunication; one detachment of military mounted police for provost duty; one detachment, Army Service Corps, for headquarters transport.

MACHINE-GUN CORPS (NEW ORGANIZATION, 1915).

Three branches: (a) Cavalry of the line; (b) infantry of the line; (c) motor machine-gun service.

Cavalry and infantry branches, organized as brigade machine-gun squadrons and companies.

Motor machine-gun service, organized as machine-gun batteries of 4 armored cars of 2 guns each.

Machine-gun company (16 guns): 9 officers, 1 warrant officer, 10 staff sergeants and sergeants, 2 artificers, 128 rank and file (2 attached); total, 150.

Company composed of 4 sections of 4 guns each.

Personnel: 2 officers, 2 staff sergeants and sergeants, 25 rank and file.

Animals: 9 horses, riding; 43 horses, draft; 4 bicycles.

This machine-gun corps is in addition to the machine-gun sections (4 guns) with each infantry battalion and cavalry regiment, making 48 machine guns with each infantry division and cavalry division.

This machine-gun corps is said to be similar to the German organization.

C. Infantry.

HEADQUARTERS OF A DIVISION (NEW ARMIES).

Personnel: 22 officers (1 major general, 2 aids, 6 staff, 7 other personnel, 5 veterinary, and 1 interpreter), 12 clerks, 86 enlisted; total, 120.

Transport: 6 motor cars, 1 cart, 4 wagons (cooks, baggage, and supplies), 1 motor lorry for electric lighting apparatus, 6 bicycles. Total vehicles, 12.

Change and increase in personnel and transport over regular establishment.

HEADQUARTERS OF AN INFANTRY BRIGADE (NEW ARMIES).

Personnel: 8 officers (1 brigadier general, 2 staff, 3 chaplains, 1 brigade machine-gun officer, 1 signal officer attached), 3 clerks, 22 enlisted; total, 33.

Transport: 4 wagons (cooks, baggage, and stores), 2 wagons (intrenching tools), 7 bicycles. Total vehicles, 6.

Change and increase in personnel and transport over regular establishment.

AN INFANTRY BATTALION (NEW ARMIES).

Personnel: 30 officers (5 headquarters, 1 machine-gun section, 24 company, 6 each), 995 enlisted; total, 1,025.

Transport: Headquarters, 9 bicycles for signalers, 4 carts, 7 wagons, limbered, for tools and small-arms ammunition; machine-gun section, 2 wagons for 4 guns, tripods, ammunition, 2 wagons for ammunition, and 4 ammunition pack saddles for lead horses; 4 companies, 8 pack mules for ammunition (2 per company), 4 traveling kitchens, 6 wagons for baggage, stores, etc. Total vehicles, 28.

Change and increase in personnel and transports mainly due to increase in machine guns from 2 to 4 per section.

DIVISIONAL AMMUNITION PARK (NEW ARMIES).

One mechanical transport company, A. S. C.

Personnel: 6 officers, 364 enlisted; total A. S. C., 370. Artillery attached, 1 officer, 77 enlisted; total, 78. Grand total, 7 officers, 435 enlisted; total, 448.

Transport: 5 motor cars, 9 motorcycles, 4 workshop lorries, 4 store lorries. Lorries, 3-ton: 17 for stores, spares, first-aid and reliefs, 32 for 18-pounder, 12 for 4.5-inch, 3 for 60-pounder, 20 for S. A. A. Divisible into 4 sections.

Change and increase in personnel and mechanical transport.

AN AMMUNITION SUBPARK FOR DIVISIONS (NEW ARMIES).

One mechanical transport company, A. S. C.

Personnel: 4 officers, 164 enlisted; total, 168. Artillery attached, 37 enlisted. Grand total, 205.

Transport: 3 motor cars, 6 motorcycles, 1 workshop lorry, 1 store lorry. Lorries, 3-ton: 10 for first-aid, artillery and engineer stores, spares for reliefs, 1 for 13-pounder, 16 for 18-pounder, 4 for 4.5-inch and 11 for S. A. A. Divisible into 2 sections. Capacity: 280 rounds 13-pounder, 3,600 rounds 18-pounder, 480 rounds 4.5-inch howitzer, and 840,000 rounds S. A. A.

New organization.

DIVISIONAL TRAIN (NEW ARMIES).

Four-horse transport companies, A. S. C.

Organization: Headquarters, headquarters company, and 3 other companies.

Personnel: 25 officers, 482 enlisted; total, 507.

Transport: For headquarters and headquarters company, 31 bicycles, 5 carts, 23 wagons, and 4 motor cars. Total vehicles, 64.

Baggage section: 98 wagons (for attachment to the several units of the division as baggage train).

Supply section: 83 wagons (for attachment to the several units of the division as supply train).

Total vehicles, 245. For each infantry battalion allotted to this division, 6 G. S. wagons additional.

Modification of regular establishment organization. Increased personnel.

DIVISIONAL SUPPLY COLUMN (NEW ARMIES).

One mechanical transport company, A. S. C.

Personnel: 5 officers, 312 enlisted; total, 317.

Transport: 2 motor cars, 7 motorcycles, 45 lorries (3-ton), 14 lorries (30-hundredweight), 2 workshop lorries, 2 store lorries.

Modification of regular establishment organization. Increased personnel and change in transport.

CYCLIST COMPANY, DIVISIONAL MOUNTED TROOPS (NEW ARMIES).

Personnel: 8 officers, 196 enlisted; total, 204.

Transport: 202 bicycles, 1 cart, 1 wagon (ammunition), 2 wagons (baggage and supplies). Total vehicles, 4.

New organization.

D. Cavalry.

THE CAVALRY DIVISION.

The proportion of officers to men in the cavalry is 1 to 22; in the infantry it is 1 to 33.5.

Cavalry field ambulances reduced from 4 to 3.

The guns of the first line transport, horse artillery brigade ammunition columns, have been assigned to the brigades; one battery, reduced from 6 to 4 guns and changed from 13-pounders to 18-pounders, is assigned to each brigade.

The cavalry ammunition parks (M. T.) and the cavalry supply columns (M. T.), formerly units of the lines of communication, have been transferred to the field troops.

Mobile veterinary sections, one to each brigade or 3 to the division, have been added to the cavalry division troops.

HEADQUARTERS OF A CAVALRY BRIGADE.

(With cavalry division.)

Personnel: 1 brigadier general, 1 aid, 2 staff, 1 brigade machine-gun officer, and 4 others; total, 8; enlisted, 45; grand total, 53.

Transport: 1 motor car, 7 bicycles, 3 wagons; total vehicles, 11.

Principal change: Increase in commissioned personnel (machine-gun officer and 1 other) and enlisted (from 41 to 45).

THE CAVALRY BRIGADE.

Headquarters; 3 cavalry regiments; 1 battery, horse artillery; 1 signal troop.

THE CAVALRY REGIMENT.

Headquarters, machine-gun section, 4 guns, and 3 squadrons.

Personnel: 26 officers, 551 enlisted; total, 577.

Horses: 534 riding, 89 draft, 6 pack; total, 629.

Transport: Headquarters, 3 bicycles, 3 carts, 2 wagons (cooks and baggage). Machine-gun section, 8 wagons (for matériel, ammunition, and 12 pack saddles for use with lead horses). Squadrons (3), 9 wagons (1 each squadron for ammunition, tools, and baggage), 12 bicycles (4 per squadron), for intercommunication. Total vehicles, 37.

Principal changes: Increase in personnel (28), machine guns (from 2 to 4), and transport vehicles (from 33 to 37).

As in the infantry battalion, the machine guns with the regiment have been doubled—4 instead of 2 guns.

THE CAVALRY SQUADRON.

Two trumpeters replaced by privates.

Interpreters provided.

Trumpet signals are not used in the field.

CAVALRY SQUADRON (DIVISIONAL MOUNTED TROOPS) (NEW ARMIES).

Personnel: 6 officers, 152 enlisted; total, 158.

Horses: 148 riding, 11 draft, 2 pack.

Transport: 1 cart, 9 wagons; total vehicles, 10 (3 wagons and 6 horses, heavy draft, provided by Army Service Corps).

New organization.

CAVALRY DIVISION SIGNAL SQUADRON.

Personnel: 3 officers, 42 enlisted; total, 45.

Transport: 2 motor cars, 1 wagon.

Total vehicles 3, bicycles 14, motorcycles 12.

Horses: 15 riding, 6 draft.

New organization.

REMOUNT UNITS.

(a) A headquarters:

Personnel: 5 officers, 16 enlisted; total, 21.

(b) A remount squadron:

Personnel: 4 officers, 197 enlisted (including 40 privates, rough-riders); total, 201.

Transport: Headquarters, 1 wagon; squadron, 2 wagons; total vehicles, 3.

New organization.

E. Artillery.**ARMY ARTILLERY BRIGADE HEADQUARTERS.**

(Horse and tractor drawn.)

Personnel: 5 officers, 29 enlisted; total, 34.

Transport: 1 bicycle, 2 carts, 1 wagon (telephone), 1 wagon (baggage); total vehicles, 4.

New organization.

ARMY ARTILLERY AMMUNITION PARK.

(4.7-inch or 60-pounder gun ammunition, or both.)

One mechanical transport company, Army Service Corps.

1. Army service corps details.

Personnel: 4 officers, 140 enlisted; total, 144.

Artillery personnel attached: 1 officer, 32 enlisted; total, 33. Grand total, 5 officers, 172 enlisted; total, 177.

Transport: 3 motor cars, 6 motorcycles, 1 workshop lorry, 1 store lorry, 34 lorries, 3-ton (26 for ammunition).

Capacity 3-ton lorry: 80 rounds 4.7-inch or 90 rounds 60-pounder.

New organization.

HEADQUARTERS OF DIVISIONAL ARTILLERY (NEW ARMIES).

Personnel: 4 officers, 21 enlisted; total, 25.

Transport: 1 motor car, 3 bicycles, 2 wagons (baggage and supplies). Total vehicles, 4.

Change: Increase in personnel and transport over regular establishment.

DIVISIONAL AMMUNITION COLUMN (NEW ARMIES).

Personnel: (Headquarters and 3 sections), 12 officers, 537 enlisted; total, 549.

Transport: 5 bicycles, 3 carts, 57 wagons (18-pounder), 12 wagons (4.5-inch howitzer), 24 wagons (small arms), 12 wagons (store, baggage, and supplies); total vehicles, 104.

New organization.

HEAVY ARTILLERY RESERVE GROUP HEADQUARTERS.

Personnel: 4 officers, 26 enlisted; total, 30.

Transport: 2 motor cars, 3 motorcycles, 1 lorry (30-hundred-weight); total, vehicles, 6.

New organization.

HEAVY ARTILLERY BATTERY AND AMMUNITION COLUMN (R. G. A.) (60-POUNDER B. L.) (NEW ARMIES).

Personnel: 6 officers, 199 enlisted; total, 205.

Transport: 4 gun carriages, 1 bicycle, 1 cart, 12 wagons with limbers (ammunition), 4 wagons (ammunition), 7 wagons (stores, baggage, etc.); total vehicles, 26.

New organization.

PACK ARTILLERY BRIGADE AMMUNITION PARK.

One mechanical transport company, Army Service Corps.

1. Army service corps details.

Personnel: 1 officer, 90 enlisted; total, 91.

Artillery attached: 1 officer, 10 enlisted.

Grand total: 2 officers, 101 enlisted; total, 103.

Transport: 1 motor car, 3 motorcycles, 19 lorries (3-ton), 1 lorry (workshop), 1 lorry (store); total vehicles, 25.

New organization.

A FIELD ARTILLERY BRIGADE.

(Four batteries, each four 18-pounder Q. F. guns.)

Headquarters, 4 batteries and ammunition column.

Personnel: 26 officers, 732 enlisted; total, 758.

Transport: 16 gun carriages, 6 bicycles, 11 carts, 48 wagons with limbers (ammunition), 12 wagons (small-arms ammunition), 19 wagons (stores, baggage, etc.); total vehicles, 98.

Changed from 3 batteries of 6 guns to 4 batteries of 4 guns each.

FIELD ARTILLERY (HOWITZER) BRIGADE (NEW ARMIES).

Four batteries and ammunition column.

(Q. F. 4.5-inch howitzer equipment.)

Personnel: 23 officers, 688 enlisted; total, 711.

Transport: 16 carriages, howitzer, with limbers, 6 bicycles, 11 carts, 48 wagons with limbers (ammunition), 16 wagons (stores, baggage, etc.); total vehicles, 83.

Changed from 3 batteries of 6 howitzers to 4 batteries of 4 howitzers each.

SIEGE ARTILLERY BRIGADE (MEDIUM).

With mechanical transport.

Headquarters and two batteries, R. G. A.

Each armed with four 9.2-inch B. L. howitzers.

Personnel: 23 officers, 768 enlisted; total, 791.

Transport: 7 motor cars, 31 motorcycles, 76 lorries (3-ton), 2 lorries, 30-hundredweight, 10 "Holt" tractors; total vehicles, 126.

Changed from 4 batteries each of four 6-inch howitzers.

SIEGE ARTILLERY BRIGADE (MEDIUM).

With mechanical transport.

Headquarters and 2 batteries, R. G. A., each armed with four 8-inch B. L. howitzers.

Personnel: 23 officers, 651 enlisted; total, 674.

Transport: 7 motor cars, 25 motorcycles, 45 lorries, 3 ton, 1 lorry (30-hundredweight), 10 "Holt" tractors; total vehicles, 88.

Changed from 4 batteries each of four 6-inch howitzers.

SIEGE ARTILLERY BRIGADE (LIGHT).

Headquarters, 2 or 3 batteries, each with four 6-inch howitzers, and ammunition column, R. G. A.

Personnel: 19 officers, 535 enlisted; total, 554. (For 2 batteries.)

Transport: 8 carriages with limbers, 9 carts, 20 wagons for ammunition and technical stores, 26 petrol lorries, 2 motor cars, 4 motorcycles, 5 wagons (baggage and stores); total vehicles, 69.

Changed from 4 batteries each of four 6-inch howitzers.

MOUNTAIN ARTILLERY BRIGADE, R. G. A., AND AMMUNITION COLUMN.

Headquarters, 3 batteries each of six 2.75 B. L. guns, and ammunition column.

Personnel: 23 officers, 997 enlisted; total, 1,020.

Animals: 62 horses, riding; 83 horses, draft; 20 horses, draft, heavy; 490 pack mules.

Transport: 5 bicycles, 5 carts, 12 wagons (ammunition, technical stores), 9 wagons (baggage and stores); total vehicles, 31.

New organization.

ARMORED MOTOR BATTERY.

(Four armored cars, each with 2 machine guns.)

Personnel: 4 officers, 56 enlisted; total, 60.

Transport: 4 armored cars, 2 motor cars (baggage and supplies), 1 lorry, 30-hundredweight (ammunition); 1 lorry, 3-ton (workshop and store); 19 motorcycles, 1 motor car; total vehicles, 28.

New organization.

MOTOR MACHINE-GUN BATTERY.

(Six machine guns.)

Personnel: 4 officers, 55 enlisted; total, 59.

Transport: 4 motorcycles (officers), 5 motorcycles (scouts), 18 motorcycles with side cars (6 for guns, 12 for men and ammunition), 3 motor cars (with box bodies) for spare men and ammunition, 2 motor cars (with box bodies) for baggage and supplies; total vehicles, 32.

New organization.

ANTIAIRCRAFT GUN DETACHMENT.

(Two 13-pounder Q. F. guns.)

Personnel: 2 officers, 41 enlisted; total, 43.

Transport: 2 motor cars for guns, 4 lorries (30-hundredweight) for ammunition, 1 motor vehicle for personnel, 1 motor car, 1 motorcycle. Total vehicles, 9.

New organization.

WORKSHOP FOR SIX ANTIAIRCRAFT GUN DETACHMENT.

(13-pounder Q. F. guns. Capable of division into two sections.)

Personnel: 2 officers, 43 enlisted; total, 45.

Transport: 2 motor cars, 5 motorcycles, 2 lorries (workshop), 2 lorries (store), 2 lorries (30-hundredweight) for personnel and first aid. Total vehicles, 13.

New organization.

F. Engineers.

HEADQUARTERS OF DIVISIONAL ENGINEERS (NEW ARMIES).

Personnel: 3 officers, 1 clerk, 9 enlisted; total, 13.

Transport: 1 bicycle, 1 cart, 2 wagons.

Organization similar to that of regular service.

BASE ROYAL ENGINEER PARK.

Personnel: 9 officers, 241 enlisted; total, 250.

New organization.

RAILWAY COMPANY (CONSTRUCTION).

Personnel: 6 officers, 249 enlisted; total, 255.

Transport: 2 motorcycles, 2 motor lorries.

Principal change in transport: From horse to motor.

FIELD SEARCHLIGHT COMPANY.

Personnel: 4 officers, 88 enlisted; total, 92.

Transport: 5 power lorries, 4 30-hundredweight lorries, 1 motor car, 6 limbers.

New organization.

ANTI-AIRCRAFT SEARCHLIGHT SECTION.

Personnel: 1 officer, 22 enlisted; total, 23.

Transport: 1 30-hundredweight lorry.

New organization.

A TUNNELING COMPANY, R. E.

(Headquarters and 4 sections, each 3 reliefs.)

Personnel: 14 officers, 325 enlisted; total, 339.

Transport: 6 bicycles, 13 motorcycles, 3 lorries (3-ton) for stores, tools, and baggage, 1 lorry (30-hundredweight), 1 box car (15-hundredweight), 1 water cart, 4 wagons, G. S. (train) for supplies; total vehicles, 29.

New organization.

BRIDGING TRAIN (HORSED TRANSPORT).

Personnel: 8 officers, 193 enlisted (mounted) and 36 (dismounted); total, 237.

Transport: 1 bicycle, 3 carts, 55 wagons (equipment), 2 wagons (supplies); total vehicles, 59.

Slight change in personnel and vehicles.

BRIDGING TRAIN (MECHANICAL TRANSPORT).

Personnel: 6 officers, 175 enlisted; total, 181.

Transport: 4 motor cars, 6 motorcycles, 50 wagons (convertible for horse or mechanical transport), 32 lorries (quadruple drive); total vehicles, 86.

New organization.

A LABOR COMPANY (MEDITERRANEAN).

Personnel: 2 officers, 258 enlisted; total, 260.

Transport: 1 water cart, 2 wagons, G. S., for tools, baggage, and supplies.

New organization. Officers, Royal Engineers.

FIELD SQUADRON.

Headquarters and 4 troops.

Personnel: 7 officers, 186 enlisted; total, 193.

Transport: Headquarters, 2 carts, 8 wagons (6 for bridge material); total, 10 vehicles.

For 4 troops: 8 carts, 8 wagons; total vehicles, 16; grand total, 26; vehicles.

Changes in personnel and equipment.

PIONEER BATTALION (NEW ARMIES).

Headquarters, machine-gun section, 4 guns and 4 companies.

Personnel: 30 officers, 1,008 enlisted; total, 1,038.

Horses: 12 riding, 60 draft, 9 draft, heavy, 98 pack mules.

Transport: 9 bicycles for signalers, 4 carts, 26 wagons; total vehicles, 32.

New organization.

AN ARMY TROOPS COMPANY, R. E.

Personnel: 3 officers, 146 enlisted; total, 149.

Transport: 3 motorcycles with side cars, 10 bicycles, 4 carts, tool, 5 wagons, 2 lorries, 3-ton; total vehicles, 23.

New organization.

A FIELD COMPANY (NEW ARMIES).

Headquarters and 4 sections.

Personnel: 6 officers, 223 enlisted (54 mounted, 169 dismounted).

Transport: 33 bicycles, 9 carts (water and tool), 19 wagons (searchlights, pontoons, trestles, technical stores, and baggage); total vehicles, 52.

New organization.

RAILWAY SUPPLY DETACHMENT.

Personnel: 3 officers, 18 enlisted; total, 21.

New organization.

G. Signal Service.**CAVALRY CORPS SIGNAL SQUADRON.**

Headquarters and 2 troops.

Personnel: 10 officers, 184 enlisted; total, 194.

Transport: 4 wagons, 3 lorries, 7 motor cars; total, 14 vehicles.

New organization: 2 troops instead of 4, as per normal signal squadron.

ARMY HEADQUARTERS SIGNAL COMPANY.

Personnel: 7 officers, 142 enlisted; total, 149.

Transport: 7 lorries (1-ton, 30-hundredweight, and 3-ton); 3 motor cars; total vehicles, 10.

Principal change, increase in personnel and all motor transport.

ARMY CORPS HEADQUARTERS SIGNAL COMPANY.

Personnel: 5 officers, 73 enlisted; total, 78.

Transport: 4 lorries (1-ton and 3-ton), 2 motor cars; total vehicles, 6.

New organization.

MOTOR WIRELESS SECTION.

Personnel: 1 officer, 27 enlisted; total, 28.

Transport: 2 wagons, motor wireless, 2 lorries, 30-hundredweight; total vehicles, 4.

New organization.

MOTOR AIR-LINE SECTION.

Personnel: 1 officer, 50 enlisted; total, 51.

Transport: 5 lorries (3-ton and 30-hundredweight), 1 motor car (light); total vehicles, 6.

New organization.

CABLE SECTION.

Personnel: 1 officer, 35 enlisted; total, 36.

Transport: 2 wagons, cable, 2 limbered; total vehicles, 4.

New organization.

H. Transport and Supply.**A DEPOT UNIT OF SUPPLY.**

Personnel: 1 officer, 13 enlisted; total, 14.

New organization.

A BAKERY SECTION.

Personnel: 2 sergeants, 2 corporals, 11 privates; total, 15.
New organization.

AN AUXILIARY HORSE TRANSPORT COMPANY.

(Two-horsed wagons. Three sections, each of 20 wagons.)
Personnel: 5 officers, 125 enlisted; total, 130.
Lines of communication transport.
New organization.

INLAND WATER TRANSPORT SECTION.

Personnel: 18 officers, 327 enlisted; total, 345.
Transport: 1 motor car, 16 motor bicycles.
New organization.

AN AUXILIARY MECHANICAL TRANSPORT COMPANY (STEAM LORRIES).

Line of communications.
Headquarters and 3 sections, A.S.C.
Personnel: 5 officers, 143 enlisted; total, 148.
Transport: 1 motor car, 1 motorcycle, 46 lorries, 3-ton steam (15 to each section), 1 lorry (workshop), 1 lorry (store).
New organization.

A RESERVE PARK (MULE TRANSPORT).

One horse transport company, A.S.C.
Personnel: 9 officers, 500 enlisted; total, 509.
Transport: 3 carts, 8 wagons (organization), 144 wagons (supplies); total vehicles, 155.
Draft mules, 673.
Personnel increased. Animals changed from horses to mules.

A RESERVE PARK (NEW ARMIES).

(Two-horsed wagons.)
Similar to regular establishment.
Enlisted personnel decreased by 2.

A WORKSHOP, A. S. C., FOR THE MOTOR AMBULANCE CARS OF A DIVISION.

Personnel: 1 officer, 20 enlisted; total, 21.
Transport: 2 lorries (3-ton) (workshop and stores), 1 lorry (30-hundredweight) for stores and personnel, 1 motor car for personnel; total vehicles, 4.
New organization.

I. Medical Department.**A FIELD AMBULANCE (NEW ARMIES).**

(Accommodating 150 patients.) (Seven motor ambulance cars and three horsed ambulance wagons.)

Personnel (3 sections) : 10 officers, 238 enlisted; total, 248.

Transport: 1 bicycle, 4 carts, 3 wagons (cooks and medical stores), 3 wagons (ambulance), 6 wagons (medical stores and baggage), 7 motor cars (ambulance), 4 wagons (train); total vehicles, 25.

New organization.

A MOTOR AMBULANCE CONVOY.

(Fifty motor ambulance cars.)

Personnel (3 sections) : 8 officers, 157 enlisted; total, 165.

Transport: 50 motor ambulances, 4 motor cars, 7 motorcycles, 1 lorry (30-hundredweight), 1 lorry (workshop), 2 lorries (store); total vehicles, 65.

New organization.

A CASUALTY CLEARING STATION.

(Two hundred sick.)

Personnel: 11 officers (including 3 chaplains), 87 enlisted; total, 98.

Transport: 3 lorries (3-ton), 3 bicycles (for chaplains).

New organization.

A GENERAL HOSPITAL (1,040 BEDS).

(Including 40 beds for officers.)

Personnel: 35 officers (including 3 chaplains attached), 206 enlisted; total, 241.

Transport: Furnished, as required, by the inspector general of communications.

New organization: Capacity doubled.

AN AMBULANCE TRAIN.

(For rail transport of 396 bed patients.)

Personnel: 3 officers, 3 nursing sisters, 47 enlisted; total, 53.

Organization personnel increased.

J. Veterinary Service.**A VETERINARY HOSPITAL.**

(For 1,000 sick horses.)

Personnel: 10 officers, 389 enlisted; total, 399.

Transport: 7 carts, 2 wagons, 1 lorry (30-hundredweight); total vehicles, 10.

New organization.

A MOBILE VETERINARY SECTION.

Personnel: 1 officer, 27 enlisted; total, 28.

Transport: 3 wagons.

New organization for service with divisions.

A CONVALESCENT-HORSE DEPOT.

(For 1,200 horses.)

Personnel: 3 officers, 128 enlisted; total, 131.

Transport: 1 cart, 1 ambulance (horse), 5 wagons. Total vehicles, 7.

New organization.

K. Military Prisons.**MILITARY PRISONS IN THE FIELD.**

(Military prison, each 500 prisoners.)

Headquarters personnel: 1 officer, 2 enlisted; total, 3.

Military prison personnel: 1 officer, 28 enlisted; total, 29.

Change in organization and increase in personnel.

L. Army Service Corps.**DOCKERS' BATTALION.**

A new organization of stevedores given a military status for better control. Enlisted personnel organized with a proportion ranking as staff sergeants, sergeants, and corporals.

FORAGERS' BATTALION.

A new organization of forage supply service given a military status for better control. Enlisted personnel must be men over 41, or physically unfit for fighting, or boys between 15 and 17; a proportion ranking as staff sergeants, sergeants, and corporals.

5. ITALY.**ARMORED MOTOR MACHINE-GUN CARS.**

Each 3 guns of the Maxim type. Cars are provided with undermountable tires. About 120-130 on hand.

Organization not known.

AVIATION SERVICE.

Has all mechanical transport.

SANITARY SERVICE.

Besides the usual ambulance cars, motor ambulance cars have been provided. Each carries, besides a doctor and a nurse, 6 patients lying and 4 sitting, or 12 sitting.

TRANSPORT SERVICE.

Mechanical transport, in addition to animal-drawn carts and wagons, has been adopted. To these motor vehicles are attached trailers, either of the mechanical traction type, or the usual four-wheel, animal-drawn type of cart.

6. JAPAN.

No changes in organization known.

7. TURKEY.

No changes in organization known.

8. RUSSIA.

No changes in organization known.

9. SERBIA.

No changes in organization known.

**STUDY ON
THE COST OF THE ARMY OF THE UNITED STATES
AS COMPARED WITH THE COST OF THE
ARMIES OF OTHER NATIONS.**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

WCD 9053-120

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STUDY ON THE COST OF THE ARMY OF THE UNITED STATES AS COMPARED WITH THE COST OF THE ARMIES OF OTHER NATIONS.

In compliance with the direction of the Secretary of War, dated September 3, 1915, the following study of the cost of the Army of the United States, as compared with the cost of the armies of other nations, is submitted.

Many articles have been published in which the cost of our Army has been compared with the cost of the armies of foreign nations. Very few of the conclusions drawn in these articles are of any practical value, due, in some cases, to the fact that the writers were not in possession of the necessary data, and in others to their assumption of improper bases for comparison.

It is a matter of common knowledge that there are two general systems in use by the nations of the world for maintaining their armed forces. These are the systems known as that of "universal military service," and that of "voluntary enlistment." In nations employing the first system, the armed forces consist of all physically qualified male citizens between certain ages. These citizens are required to submit themselves for training in time of peace as well as for service in time of war. In the nations employing the second system the armed forces are composed of citizens who voluntarily submit themselves for training in peace and for service in war. In the first case the obligation of military service is paid by personal service, and the remuneration given the individual soldier has no relation to the value of the service actually rendered by him; in the second, the soldier must be paid an amount sufficient to induce him to submit himself for training and service.

In countries employing the system of "universal military service," military training is looked upon as a part of the education of the individual citizen, just as is the common school course, and citizens of those countries would no more think of demanding pay for their individual services during this education, than they would while attending the common schools.

In those countries employing the system of "voluntary enlistment," however, the citizen looks upon the profession of arms in time of peace as a trade or profession by means of which he expects to earn his livelihood, and he will not offer himself unless he is assured remuneration at least equal to that which he would receive in civil

occupations. As the item of pay in those countries employing the system of "voluntary enlistment" is by far the largest single item in the expense account, it is to be expected that nations employing this system will have to pay for their armed forces an amount greatly in excess of those employing the system of "universal military service," and we will find this to be the case.

From what has been said, it is obviously unscientific to compare the cost of maintaining an army by these two widely differing systems in terms of money actually paid out of the treasury, since we would be comparing two absolutely dissimilar things. If we wish, then, to compare the cost of our Army with the cost of those of other nations, we must limit our comparison to those nations which employ the same general system as ourselves. We will find that only one other nation in the world does so—Great Britain.

It is, therefore, with cost of the army and military establishment of Great Britain only that we can compare the cost of our own if we hope to obtain results that mean anything. This comparison has, of course, been made many times, as has been said above. The usual method of procedure has been to obtain the per capita cost of the soldier by dividing the total cost of the military establishment in each country by the total number of enlisted men employed and comparing the results. But even a superficial study of the subject reveals the fact that, while the broad systems on which the armed forces of Great Britain and the United States are maintained are the same, they differ from each other in important details. So much so, in fact, as to make the method of comparison mentioned above absolutely false and misleading, unless considered in connection with certain other subjects, as will be evident as we proceed with this study. So, if we desire to reach a real basis for comparison of cost, we will find it necessary to make a detailed study of the various items of expenditure in Great Britain and in the United States, and endeavor to bring them to a common basis. This is a most difficult thing to do, as will be evident as we proceed with the study, and we will find that our comparison, at best, is only an approximation.

Appended to this study will be found tables containing the data from which the conclusions have been deduced. The authority is given for each table.

It will be noted that the figures and other data for the United State have been taken for the fiscal year ending June 30, 1915. This was done in order that we might have the latest available data on costs. The year 1912-13 has been chosen for Great Britain, in order to avoid becoming involved in consideration of extraordinary expenditures in that country incident to the present war in Europe.

For both countries those items of expenditure for purposes other than military will be deducted. The resulting totals will give us the

total costs of the military establishments in each country. In both countries consideration of the subject of reserves has been omitted since the United States has no reserves. In Great Britain the Indian Army has been excluded, since the total expenses of the British Army in India, including the cost of transportation, etc., to and from India, is defrayed by the Indian Government.

When we come to examine and compare the various items of expenditure in Great Britain and in the United States, we will find that many of them are not susceptible of direct comparison, item for item, due to the fact that the systems of organization and administration differ so materially in the two countries. Thus the comparative figures arrived at do not express the whole truth, and we will find, as a matter of fact, that it is impossible to make a true comparison of costs by means of figures alone.

Again, even after having arrived at the actual money costs of the military establishment in each country, there are still certain conditions to be considered which vitally effect the subject and which must be taken into account if we are to make a comparison on anything like a scientific basis. For example, the comparative cost of living, standard of living, rates of wages, etc., all affect materially the cost of maintaining the military establishments in each country. Certain deductions must also be made from the various totals in order to bring the resulting figures to a comparable basis. This will be apparent as we proceed.

The total expenditure for the fiscal year 1914-15 from appropriations for the support of the Army of the United States was \$116,127,753.60. (Table 1.) Of this amount \$2,879,212.15 was for unusual expenses incident to the Mexican situation (memorandum Q. M. G.) and must be deducted. This, because the totals for Great Britain contain no similar item. Deducting this amount from the total expenditures we have \$113,248,541.52. A further deduction is now necessary of certain sums disbursed by the War Department pursuant to appropriations which have but slight connection with the cost of the Army. No such items appear in the totals for Great Britain. These sums, listed in detail in Table 3, amount to \$7,242,567.99. Deducting this amount we have, as the total military expenditure for the United States, \$106,005,973.53. This amount is logically comparable with the total military expenditure for Great Britain, which was \$114,264,512.57, and which is shown in detail in Table 2.

The actual strength of the Army of the United States on July 1, 1915, was 101,195. (Table 4.) This includes, of course, the 3,993 enlisted men of the Hospital Corps and the 4,388 enlisted men of the Quartermaster Corps, which, by law, are not included in the "authorized strength of the Army."

The actual enlisted strength of the British Army on March 1, 1913, was 171,563. (Appropriation account, Great Britain, 1912-13, with report of comptroller and auditor general.) This includes the "standing" army "at home" and in the colonies (exclusive of India, for reasons mentioned above). Based on the above figures, therefore, the per capita costs per enlisted man are as follows:

Great Britain.....	\$660. 01
United States.....	1, 047. 54

On the same basis the per capita costs, all ranks being considered, are:

Great Britain.....	\$630. 03
United States.....	1, 000. 13

The above figures, however, do not show the true comparative per capita costs, as will be shown in what follows: First, the total for the United States includes \$1,138,322.68 for pay and allowances of officers on duty not connected with the Regular Army. (Table 3.) As no equivalent item appears in the British accounts of effective strength, this sum should also be deducted from the total for the United States. Deducting this sum we obtain \$104,867,650.85.

Owing to the very limited extent of her coast line, Great Britain has depended almost entirely upon her navy for protection against serious invasion. Consequently only her navy yards, dock yards, and certain exposed arsenals have been fortified.

The situation in the United States is vastly different, as can be seen from the percentages of coast artillery maintained in the two countries in Table 8; 8.2 per cent for Great Britain and 18.59 per cent for the United States. Our strictly coast defense expenditures are shown in Table 7. However, the costs of these fortifications for Great Britain are impracticable of separation from the total expenditures for permanent military works of all kinds, which, as shown in Table 2, amounted to \$5,884,847.37 in 1912-13. The corresponding items in the United States expenditures for 1915 amounted to \$10,188,667.58 (total permanent works, etc., Table 1, less corresponding items Table 3, already deducted). After deducting from the totals last above stated, the amounts expended respectively for permanent works, etc., the resulting totals are:

	Great Britain.	United States.	Percentage United States to Great Britain.
Total cost, effective army, less cost of permanent works..	\$108, 379, 665. 20	\$94, 678, 983. 27	87. 35
Per capita cost per enlisted man.....	631. 71	935. 60	148. 10
Per capita cost, all ranks considered.....	597. 58	893. 26	149. 48

One of the incidents of service in our Army which greatly increases its cost is the necessity of maintaining troops in Alaska, Hawaii, Porto Rico, the Canal Zone, the Philippine Islands, and China. The additional cost for maintaining garrisons in the above-mentioned localities, in excess of the amount necessary to maintain garrisons of the same strength and composition in the United States, amounted in 1914-15 to \$3,047,583.64, or to an increased per capita cost per enlisted man serving in those localities of \$84.62. (See Table 14.) In other words, after making the deductions as set forth in the body of this study, the per capita cost for the United States Army would be \$905.51 if our entire Army were stationed in the United States. These figures include only those pertaining to the Quartermaster Corps. There is, of course, an increased cost of maintenance in all other departments incident to foreign service, but figures for them are not available.

Since from lack of data it is impossible to obtain a similar figure of per capita cost for Great Britain, this figure is not a comparable one. It is only given as showing one of the causes of the high per capita cost of our Army. But, while exact figures on increased cost of maintenance on foreign service are not available for Great Britain, it is well known that the British colonies contribute certain sums toward the support of the colonial forces and, in addition, pay a certain amount into the British treasury as their share of the general expenses of the British military establishment. Thus, during the fiscal year 1912-13 the colonial governments of Egypt, Ceylon, Mauritius, Hongkong, the Straits Settlements, and Malta contributed a total of \$3,211,675.59 for this purpose. (See "Army appropriation accounts, 1912-13," with the report of the comptroller and auditor general.) The United States, of course, receives nothing from its outlying possession in support of its military establishment.

This is as far as we can carry our comparison as expressed in actual figures, but it by no means gives us a true comparison.

Based on the above figures, the United States soldier *apparently* costs the Government \$303.89 more than does the British soldier, considering enlisted strength only. Let us see if this is really true, and if true, why.

As will be seen from Tables 1 and 2, one of the principal items of cost in both countries is that of "pay and mileage." This item for the United States was \$49,722,369.91, and for Great Britain \$39,967,066.82. The number of officers for the United States was 4,797 and the number of enlisted men 101,195. In Great Britain the number of officers was 9,800 and the number of enlisted men 171,563.

The relative rates of pay for the various grades in both countries, in so far as they can be compared, are shown in Tables 5 and 6. In these tables the rates of pay quoted are "base" pay of the grade.

In the United States the officer is paid in accordance with his rank; in Great Britain only partially so. The United States officer gets the pay corresponding to his rank and length of service, regardless of the duty he is performing; in the British service the officer's pay depends on many things in addition to his rank. For example, a British officer holding a particular position or performing certain work is paid a fixed sum in addition to the "base" pay of his rank. Thus a lieutenant colonel in command of his battalion is paid a sum in addition to his pay as a lieutenant colonel. An adjutant is paid an additional sum while holding this position. In other words, the pay of the British officer depends largely on the duty he is performing at the time and only to a limited extent on the rank he holds. In addition to this, the British officer receives many and various allowances. He receives an increase of pay when under canvas or in the field, an allowance for servants, an allowance for messing, and an allowance for his kit. He receives additional pay for having perfected himself in a foreign language. Also certain brevet and honorary titles carry increased pay. These are only a few of the items which go to make up the pay of the British officer. The regulations covering the subject of "allowances" in the British Army are promulgated in a publication entitled "Regulations for the Allowances of the Army," which contains 188 pages of fine print. This publication deals exclusively with the subject of "allowances" and is, in addition to the regulations governing pay proper, which are contained in a publication entitled "Royal Warrant for the Pay, Appointment, Promotion, and Noneffective Pay of the Army," which contains 327 pages of fine print. From all this it will be seen how very difficult it is to ascertain the exact actual compensation of the British Army officer. To do so we would have to know just what duty each officer of the British Army is performing and where he is stationed, which, of course, is impossible. We can not, therefore, ascertain the exact amount of the pay of British officers by rank.

In the United States Army the officer on duty with troops receives the pay of his grade and no more, with the exception of the comparatively small allowance for heat and light.

It is therefore evident that the comparison of the "base" pay of the British officer with the "base" pay of the United States officer is not an accurate one. To make the comparison accurate we would have to add to the pay of the British officer such "allowances" as he receives in addition to his base pay.

Unfortunately, it is not possible to do this, as no data are available from which we can ascertain what officers are drawing these allowances. So it is impossible to make an actual comparison in figures of the pay of the British and United States officer, grade for grade. The best we can do is to show the "base" pay of the United States

officer and for the British officer the "base" pay plus those allowances which all officers in the British service receive, bearing in mind the fact that in the case of the United States officer this covers all of his remuneration (less the heat and light allowance), while in the case of the British officer his "base" pay is only a portion of his total remuneration, often only a small portion of it.

But even with the addition of "allowances," it is undoubtedly true that the British officer does not receive as high pay as the United States officer. Is there any reason, then, why Great Britain can obtain officers at a smaller rate of pay than can be done by the United States?

It is a well-known fact that the majority of British officers are not expected to live on their army pay. In order to remain in the service and live as his fellows live, the British officer must have an income in addition to his pay. The men who enter the British Army as officers in peace time come, as a rule, from a class that does not engage in trade or depend on their own efforts to gain a livelihood, and they embrace the profession of arms not as a means of gaining a living but because it offers them a position which is considered a fitting one for men of their social standing. The question of pay, then, is to the British officer a secondary one.

This is not the case with the officer in the United States Army. He comes into the service from every walk of life and social class and chooses the Army as he would any other profession. He seldom has any income in addition to his pay, and the question of the remuneration he is to receive is a very vital one, since he must compare it with the amount he would be able to earn in some other trade or profession. The principle that the pay of a public officer should be sufficient to support him obtains universally in the United States, and this country does not expect the public servant to give his service to the state without adequate compensation.

It will have been noted in Tables 11 and 12 that the items of "pay" and "mileage" have been considered together. This was necessary because the items of pay and mileage for Great Britain were not given separately and could not be ascertained. The item for mileage is undoubtedly much larger for the United States than for Great Britain, owing to the comparatively small area of the United Kingdom and to the fact that the stations of regiments in England, Ireland, Scotland, and Wales are never changed. In this connection, too, the numerous changes of station of officers to and from the Philippines, Hawaii, and the Canal Zone made necessary by law and the changes of station of officers due to the operation of the so-called "Manchu" law must not be lost sight of. Great Britain relieves her troops on foreign service once in 12 years, while the United States is compelled by law to relieve them (or the individuals

thereof) once in two years. From all of the above it is evident that, while the pay of the British officer is undoubtedly less than the pay of the United States officer, the difference is not nearly so great as has formerly been supposed, and this difference is largely explained by differences in the circumstances affecting the two services. In this connection it is interesting to note that the base pay of all captains and first lieutenants in the British service has been increased 20 per cent and that of second lieutenants 31 per cent since the beginning of the present war. There has also been an increase in the "kit" and "outfit" allowances of from 25 per cent to 66 per cent and a decided increase in the pension rates for widows, as well as in the "separation" allowance.

The Canadian rate of pay for a private of the lowest grade now serving with the combatant forces is \$1.10 per day, and his "separation allowance" amounts to \$20 per month.

We now come to the consideration of the pay of enlisted men in the two services.

Table 6 shows the pay of such grades as are comparable in the two countries. There are "allowances" and additional items of pay for both countries, but the tables do not show them because it was found to be impossible to obtain them and because they did not pertain to the various grades as such. We are compelled, then, to compare the "base" alone. As will be seen from the table, the pay of the enlisted man in the United States Army is considerably higher than the pay of the same or similar grade in the British service. What we desire to know is whether or not there is any explanation for this fact.

The class from which the enlisted man is drawn is practically the same in the United States and in Great Britain. He comes from the so-called laboring class. As each country obtains its soldiers by voluntary enlistment, the recruit is influenced to enlist by practically the same inducement, namely, the remuneration he is to receive. Patriotism, of course, plays a part, but candor compels us to admit that in time of peace it is a very small part. Each country must, then, go into the labor market and bid for the services of the men who are to make up the rank and file of its army. This being the case, it will be necessary, in comparing the remuneration the soldier receives in each country, to consider several factors which have a very direct bearing upon enlistment and therefore go to fix the rate of pay which must be offered in order to induce men to enlist. The most important of these are rate of wages, the cost of living, and the standard of living.

Referring to Tables A, B, C, we will find that the average expenditure for food among the laboring classes is 66 per cent higher in the United States than in Great Britain, 21 per cent higher for fuel and

91 per cent higher for rent. The exact figures for the fourth considerable item going to make up the cost of living—namely, clothing—it was impossible to obtain, because of lack of data comparable in the two countries. It is a matter of common knowledge, however, that clothing is much higher in the United States than in Great Britain. The higher cost of living in the United States is caused, in part, by the higher prices of the articles consumed, but to a much greater degree by the higher standard of living of the laboring classes in the United States. It is, of course, the latter that more directly affects the rate of pay and compels the higher rate in the United States, although the former enters into the question to a certain extent. But the factor which affects the rate of pay most directly is the rate of wages in civilian occupations.

The comparative rates of wages in the United States and Great Britain are set forth in Tables D, E, F, G for those trades and callings where comparable data were available. We find that the average wage in 16 trades and callings is 159 per cent higher in the United States than in Great Britain. In one calling only does it fall below 150 per cent higher, and that is school teaching, a calling which is notoriously underpaid in this country.

It is evident, then, that in order to induce men to enlist the United States must offer a much higher rate of pay than must Great Britain. And, if we compare the rates of pay of the British and United States soldier with the rates of wages in the two countries, we are compelled to admit that, instead of being overpaid, the United States soldier is paid relatively less than the British soldier.

We now come to a consideration of the items which go to make up the bulk of the expense of the military establishments in both countries. We find that these consist of four items: (1) Pay, mileage, etc. (2) subsistence, (3) transportation, and (4) clothing. For the two countries they are as follows:

Items.	Great Britain.	United States.
Pay, mileage, etc.....	\$39,967,066.82	\$49,722,369.91
Subsistence.....	8,260,721.66	9,802,141.39
Transportation.....	4,733,304.84	10,680,546.69
Clothing.....	5,848,651.48	4,623,272.94

In terms of percentages to the total expenditures these items stand as follows:

Items.	Great Britain.	United States.
	<i>Per cent.</i>	<i>Per cent.</i>
Pay, mileage, etc.....	34.10	43.90
Subsistence.....	7.22	8.65
Transportation.....	4.14	9.45
Clothing.....	5.11	4.08

In terms of per capita cost, considering enlisted strength only, they are as follows:

Items.	Great Britain.	United States.
Pay, mileage, etc.....	\$232.95	\$491.35
Subsistence.....	48.14	96.86
Transportation.....	27.58	105.54
Clothing.....	34.91	45.68

For Great Britain the sum of the expenditures for these four items is 50.57 per cent of the total expenditures for military purposes and for the United States, 66.08 per cent.

The most important of the factors affecting pay, mileage, etc., have already been considered when dealing with pay.

In considering the second item of greatest expense, "Subsistence," we will find in Table 13 that the ration for the United States Army is larger both in total quantity and in number of components than that of the British Army. This is explained, of course, by the higher standard of living in the United States. In addition to this, as already stated, the average cost of the average workingman's food expenditures in the United States is very nearly double that in Great Britain. This is brought about by the higher standard of living and by the increased cost of food articles in the United States over Great Britain.

When we come to examine the third item, "Transportation," we find that several factors must be taken into consideration. In the first place this item for the United States includes the cost of transportation not only within the continental limits of the United States, but also to and from and within Hawaii, the Philippine Islands, Alaska, the Canal Zone, and, to a limited extent, Guam. In the item of transportation for Great Britain, the cost of transportation between England and India is not included, since India pays all costs of transportation both ways for both troops and supplies. Again, our garrisons within the continental limits of the United States are distributed over an area of 2,973,890 square miles, while the territory of the United Kingdom embraces an area of only 121,633 square miles, or less than one twenty-fourth that of the United States. Not only are the distances over which troops and supplies must be transported so vastly greater in the United States, but the cost per individual and per pound per mile is greater than in the United Kingdom. In addition to this, as has already been noted when considering the item of "Pay, mileage, etc.," the stations of British regiments in the United Kingdom are seldom or never changed and the colonial troops are changed only once in 12 years. The great difference in the comparative item of transportation in

the United States and Great Britain is strikingly shown by the per capita cost of the soldier as affected by this item, \$105.54 for the United States and \$27.58 for Great Britain.

In respect to the fourth item of greatest cost, "Clothing," we find an increase of per capita cost of only \$10.77 for the United States. This is fully accounted for by the higher cost of clothing in the United States.

We must now consider several other factors which affect the relative cost of the British and United States Armies.

As is well known, the cost of equipment and maintenance of the various arms of the service differs materially. In a study made in the Office of the Quartermaster General of the Army in September, 1915 (already referred to), we find a table showing the first cost and annual cost of maintenance for organizations of the various arms of the service expressed in terms of per capita cost of enlisted men, quartermaster expenditures only being considered. The table, in part, is as follows:

Comparative cost of the several arms based upon recent estimates prepared in this office (Quartermaster General), the cost of the complete quartermaster field equipment and annual cost of maintenance of regiments and smaller organizations at war strength in permanent camp in time of peace, expressed in each instance upon a per capita basis, are as follows:

Organizations.	First cost.	Annual cost of maintenance.
REGIMENTS.		
Infantry.....	\$106.67422	\$557.61
Provisional coast artillery (for infantry duty).....	119.93292	627.63
Cavalry.....	318.17225	772.47
Field artillery (average) for light, horse, heavy, and mountain.....	333.42676	747.26

This table, of course, does not consider the cost of the ordnance equipment, which is vastly greater for cavalry and artillery than for infantry. Nor does it include the garrison equipment, either quartermaster or ordnance, nor the cost of upkeep of our unnecessarily expensive posts. The table shows what, of course, is well known; that infantry is the less expensive arm both in first cost and in cost of maintenance. Thus the cost of maintenance of coast artillery (equipped as infantry only) is 12 per cent, field artillery 34 per cent, and cavalry 38 per cent greater than infantry. It is therefore evident that if the proportions of the various arms maintained by the United States and Great Britain differ materially, there will be an increase or decrease in the comparative cost of the two armies in proportion to the numbers comprising the various arms in the two countries. Let us, then, see what the proportions of the various arms maintained in the two countries are. We will find these data in

Table 8, expressed in percentages of the enlisted strength in each arm to the total enlisted strength of the army as follows:

Arm.	Great Britain.	United States.
	<i>Per cent.</i>	<i>Per cent.</i>
Infantry.....	50.51	41.06
Coast artillery.....	8.20	18.95
Cavalry.....	7.36	14.47
Field artillery.....	8.92	5.59

Combining these percentages we find that the United States maintains 14.53 per cent more of the more expensive arms and 9.45 per cent less of the less expensive arms than does Great Britain.

As the per capita cost of officers is, of course, greatly in excess of that of enlisted men, it is evident that the greater proportion of officers to men in an organization the greater will be the per capita cost of the organization.

The number of enlisted men per officer in the various arms of the service were:

Arm.	Great Britain (Mar. 1, 1913).	United States (July 1, 1915).
	<i>Per cent.</i>	<i>Per cent.</i>
Infantry.....	29.84	24.55
Coast artillery.....	23.10	27.00
Cavalry.....	27.40	20.28
Field artillery.....	27.58	23.08

Thus in every arm except coast artillery (which includes only 8.2 per cent of her total enlisted strength), Great Britain's organizations contain more enlisted men per officer than do similar organizations in the United States. This is due, of course, not so much to the fact that the organizations of the various arms differ in the two countries as to the fact that the majority of our organizations are maintained at "peace strength," while those of Great Britain either are at "war," or nearly "war," strength at all times. If all of our organizations were maintained at "war" strength, the proportions of officers to enlisted men in the various arms would be as follows:

- Infantry, 1 officer to 36.72 enlisted men.
- Coast Artillery, 1 officer to 27 enlisted men.
- Cavalry, 1 officer to 24.72 enlisted men.
- Field Artillery, 1 officer to 26.38 enlisted men.

The proportion of officers to enlisted men, considering the entire military establishment in each country as now maintained, is: Great Britain, 1 officer to 17.50 enlisted men; and the United States, 1 officer to 21.09 enlisted men. This is due to the fact that Great Britain maintains her organizations at "war" strength, and to the fact

that she has many more officers on staff and other detached service than has the United States.

Even with this small proportion of enlisted men to officers in the United States Army, if we subtract the existing necessary "overhead" charges (which should not change materially with the increase or decrease of the combatant forces), we will find that the per capita cost of the enlisted man is \$914.95.

As has been pointed out in the course of this study, it has been found impossible to reduce the comparisons of cost of the armies of Great Britain and of the United States to absolutely comparative figures in all instances. The reasons for this were mentioned in each case. However, it is believed that the cost of the United States Army does not compare unfavorably with that of Great Britain if we take into consideration the various conditions obtaining in the two countries.

The impossibility of comparing the cost of an army maintained by the system of "universal military service" with one maintained by the system of "voluntary enlistment" was discussed at the beginning of this study. To show how impossible it would be to obtain recruits for our Army with the rates of pay for privates in their first enlistment obtaining in the most important of the countries employing the system of "universal military service," the following is quoted:

Monthly pay of private in first year of enlistment.

Germany.....	\$3. 21
France.....	1. 70
Russia.....	. 32
Japan.....	. 60
Austria.....	. 73

Summary.

	Great Britain, fiscal year 1912-13.	United States, fiscal year 1915.
Total military expenditure.....	\$114, 264, 512. 57	\$116, 127, 753. 67
Same, less unusual expenses due to Mexican situation.....	114, 264, 512. 57	113, 248, 541. 52
Expenditures for effective forces only.....	114, 264, 512. 57	106, 005, 973. 53
Pro rata per enlisted man of expenditures for effective forces.....	660. 01	1, 047. 54
Pro rata cost, all ranks, of expenditures for effective forces.....	630. 03	1, 000. 13
Expenditures: Less pay, etc., of officers on duty not connected with Army.....	114, 264, 512. 57	104, 867, 650. 85
Same, less amount of permanent works, etc.....	108, 379, 665. 20	94, 678, 983. 27
Per capita cost per enlisted man (lowest comparative figures obtainable).....	631. 71	935. 60
Per capita cost, all rank (lowest comparative figures obtainable).....	597. 58	893. 26
Principal items of expense in terms of percentage to total military expenditures:		
Pay, mileage, etc.....per cent.....	34. 10	43. 90
Subsistence.....do.....	7. 22	8. 65
Transportation.....do.....	4. 14	9. 45
Clothing.....do.....	5. 11	4. 08
Pro rata per enlisted man, at present ratio of 1 officer to 21 enlisted men, of total expenditures, less existing overhead charges, which do not change with size of Regular Army.....		\$914. 95

Conditions materially affecting the foregoing results but not susceptible of compilation therewith.

Average expenditures by laboring class for—	Higher in United States than in Great Britain..	Per cent.
Food.....	.....	66
Fuel.....	.....do....	21
Rent.....	.....do....	91
Average wages.....	.....do....	159

	United Kingdom.	United States.
Area in square miles.....	121,633	2,973,890
Length of foreign tours in years.....	12	3
Average annual cost of maintenance per enlisted man:		
Infantry.....	(?)	\$557.61
Provisional coast artillery for infantry duty.....	(?)	627.63
Cavalry.....	(?)	772.47
Field artillery.....	(?)	747.26
Proportion maintained to total enlisted strength:		
Infantry..... per cent..	50.51	41.06
Coast artillery..... do..	8.20	18.95
Cavalry..... do..	7.36	14.47
Field artillery..... do..	8.92	5.59
Arms, proportion United States to Great Britain.....	¹ 14.53	² 9.45
Number of enlisted men per officer:		
Infantry.....	29.84	24.55
Coast artillery.....	23.10	27.00
Cavalry.....	27.40	20.28
Field artillery.....	27.58	23.08
Number of enlisted men to officer, considering all officers and enlisted men in military establishment.....	17.50	21.09
Same if all United States organizations were maintained at "war" strength:		
Infantry.....		36.72
Coast artillery.....		27.00
Cavalry.....		24.72
Field artillery.....		26.38

¹ More expensive.

² Less expensive.

INDEX OF TABLES.

Table.

1 A. Total costs:

Pay, mileage, etc.

Subsistence.

Transportation.

Clothing.

Percentage of above to total costs.

Per capita costs, enlisted men only.

Per capita costs, all ranks.

1. Recapitulation, expenditures, United States, fiscal year 1915.

1 (a). Detail statement, expenditures, United States military establishment, for year 1915.

2. Detail statement, expenditures, British military establishment, fiscal year 1912-13.

2a. Detail statement, expenditures, British military establishment, fiscal year 1912-13.

3. Items not properly chargeable to cost of Regular Army of United States.

3 (a). Pay, etc., of officers and enlisted men, United States Army, on duty not connected with the Regular Army.

4. Strength of United States Army, July 1, 1915 (memorandum The Adjutant General).

5. Comparative statement, pay, etc., officers, United States and Great Britain.

Table.

- 5 (a). Pay, etc., of officers, British Army at home.
 5b. Pay, etc., of officers, United States Army.
 6. Comparative statement, pay of enlisted men, United States and Great Britain.
 6a. Minimum pay British warrant officers and enlisted men serving at home.
 6b. Minimum pay enlisted men United States Army.
 7. Items of United States expense relating solely to coast defense.
 8. Comparative statement of enlisted strength of Infantry, Cavalry, and Artillery, to total enlisted strength.
 9. Comparative statement of number of enlisted men to officers in several arms, United States and Great Britain.
 10. Number of officers and enlisted men in principal arms of British Army, except those serving in India.
 11. Percentages and comparative costs, Great Britain, of principal items of expenditure.
 12. Percentages and comparative costs, United States, of principal items of expenditure.
 13. Comparative statement, ration components, United States and Great Britain.
 14. Additional cost Quartermaster's Department, for maintaining troops outside continental limits of United States.
 A, B, C. Comparative statement, costs of food, fuel and rent, United States and Great Britain.
 D, E, F, G. Comparative statement, wages, United States and Great Britain.

TABLE NO. 1A.—*Comparative cost, Great Britain and the United States.*

	Great Britain.	United States.
Total cost of military establishment exclusive of unusual expenses.....	\$114,264,512.57	\$113,248,541.52
Pay, mileage, etc.....	39,967,066.82	49,722,369.91
Subsistence.....	8,260,721.66	9,802,141.39
Transportation.....	4,733,304.84	10,680,546.69
Clothing.....	5,848,651.48	4,623,272.94
PERCENTAGE OF ABOVE ITEMS TO TOTAL COST.		
Pay, mileage, etc.....	34.10	43.90
Subsistence.....	7.22	8.65
Transportation.....	4.14	9.43
Clothing.....	5.11	4.08
PER CAPITA COST, CONSIDERING ENLISTED MEN ONLY.		
Total.....	666.01	1,119.11
Pay, mileage, etc.....	232.95	491.35
Subsistence.....	48.14	96.86
Transportation.....	27.58	105.54
Clothing.....	34.91	45.68
PER CAPITA COST, CONSIDERING BOTH OFFICERS AND ENLISTED MEN.		
Total.....	630.03	1,068.46
Pay, mileage, etc.....	214.30	469.11
Subsistence.....	45.54	92.48
Transportation.....	26.09	100.76
Clothing.....	32.24	43.61

TABLE NO. 1.—Recapitulation.

	Appropriations.	Maintenance.	Permanent works, etc.	Savings.	Deficit.
Office Secretary of War.....	\$25,000.00	\$20,000.00	.....	\$5,000.00	.....
Office Chief of Staff.....	65,350.00	53,935.76	.....	11,414.24	.....
Adjutant General's Department.....	7,500.00	5,406.00	.....	2,094.00	.....
Chief Coast Artillery Corps.....	108,000.00	21,371.17	\$86,628.83	.....	.....
Bureau of Insular Affairs.....	2,500.00	1,304.60	.....	1,195.40	.....
Office Chief Signal Officer.....	1,024,444.64	619,154.00	333,296.43	71,994.21	.....
Medical Department.....	985,000.00	929,261.33	.....	55,738.67	.....
Engineer Department.....	1,976,500.00	364,865.26	1,611,634.74	.....	.....
Ordnance Department.....	18,249,607.62	4,147,380.78	11,662,237.96	2,439,988.88	.....
Quartermaster Department.....	93,719,579.47	92,021,335.28	1,648,842.92	1,049,401.27	\$1,000,000.00
Division of Militia Affairs.....	1,672,085.06	1,514,935.06	95,006.31	62,143.69	.....
U. S. Military Academy.....	997,899.54	978,705.16	12,452.08	6,742.30	.....
	118,833,466.33	100,677,654.40	15,450,099.27	3,705,712.66	1,000,000.00
		15,450,099.27			
		116,127,753.67			
Amount of unusual expenses for fiscal year 1915 due to Mexican situation (reported by Quartermaster General).....		2,879,212.15			
		113,248,541.52			

TABLE NO. 1 (a).—Expenditures for the United States Military Establishment, fiscal year 1915.

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.	Deficit.
Contingencies of the Army.....	\$25,000.00	\$20,000.00	.....	\$5,000.00	.....
Office of the Chief of Staff:					
Army War College.....	9,000.00	8,999.63	.....	.37	.....
Contingencies, 1915.....	26,000.00	15,116.53	.....	10,883.47	.....
United States service schools.....	30,350.00	29,819.60	.....	530.40	.....
	65,350.00	53,935.76	.....	11,414.24	.....
Adjutant General's Department:					
Contingencies, military departments and commands.....	7,500.00	5,406.00	.....	2,094.00	.....
Chief, Coast Artillery Corps:					
Coast Artillery School, Fort Monroe, incidental expenses.....	10,000.00	10,000.00	.....	.....	.....
Construction methods of Coast Artillery war instruments.....	25,000.00	.....	\$25,000.00	.....	.....
Engines, generators, etc.....	7,000.00	3,252.98	3,747.02	.....	.....
Special apparatus, etc.....	3,000.00	3,000.00	.....	.....	.....
Engines, generators, etc.....	5,500.00	5,118.19	381.81	.....	.....
Professional books, etc.....	2,500.00	.....	2,500.00	.....	.....
Construction fire control stations, insular possessions.....	55,000.00	.....	55,000.00	.....	.....
	108,000.00	21,371.17	86,628.83	.....	.....
Bureau of Insular Affairs:					
Care of insane Filipino soldiers.....	2,000.00	1,304.60	.....	695.40	.....
Care of insane Porto Rican soldiers.....	500.00	.....	.....	500.00	.....
	2,500.00	1,304.60	.....	1,195.40	.....
Office, Chief Signal Officer:					
Signal Service of the Army.....	250,000.00	219,999.18	30,000.82	.....	.....
Aeronautics.....	200,000.00	200,000.00	.....	.....	.....
Fire control at fortifications.....	122,790.32	.....	91,755.99	31,034.33	.....
Fire control at fortifications, Panama Canal.....	43,454.04	.....	43,454.04	.....	.....
Fire control at fortifications, Isthmian Canal.....	10,800.00	.....	10,800.00	.....	.....
Panama fortifications.....	23,270.40	.....	21,928.22	1,342.18	.....
Maintenance, fire control installation, seacoast defenses.....	160,283.47	154,956.24	.....	5,327.23	.....

TABLE NO. 1 (a).—Expenditures for the United States Military Establishment, fiscal year 1915—Continued.

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.	Deficit.
Office, Chief Signal Officer—Con.					
Washington-Alaska military cable and telegraph system, 1914-15.	\$47,559.87		\$47,559.87		
Washington-Alaska military cable and telegraph system, 1915.	50,000.00		50,000.00		
Fire-control installation, insular possessions.	42,682.75		16,932.62	\$25,750.13	
Maintenance, etc., fire-control installation, insular possessions.	11,288.74	\$10,044.61		1,244.13	
Annunciator buzzer system at Porto Rico.	3,800.00		3,795.89	4.11	
Signal equipment for coast defense ports.	12,000.00	12,000.00			
Commercial telephone service, 1915.	6,000.00	5,920.97		79.03	
Commercial telephone service, 1915-16.	2,000.00	778.00		1,222.00	
Equipment, coast artillery armories, Organized Militia.	17,068.98		17,068.98		
Repairs, deep-sea military cables.	21,446.07	15,455.00		5,991.07	
	1,024,444.64	619,154.00	333,296.43	71,994.21	
Medical Department:					
Medical Hospital Department.	700,000.00	694,086.29		5,913.71	
Army Medical Museum.	5,000.00	2,731.17		2,268.83	
Artificial limbs.	275,000.00	229,846.39		45,153.61	
Trusses for disabled soldiers.	3,500.00	1,833.08		1,666.92	
Appliances for disabled soldiers.	1,500.00	764.40		735.60	
	985,000.00	929,261.33		55,738.67	
Engineer Department:					
Engineer depots.	25,000.00	25,000.00			
Engineer school.	25,000.00	25,000.00			
Engineer equipment of troops.	50,000.00	14,486.85	35,513.15		
Civilian assistants to engineer officers.	40,000.00	40,000.00			
Contingencies.	5,000.00	5,000.00			
Construction of gun and mortar batteries.	250,000.00		250,000.00		
Modernizing emplacements.	100,000.00		100,000.00		
Electric light and power plants, sea-coast defenses.	50,000.00		50,000.00		
Searchlights for harbor defenses.	100,000.00		100,000.00		
Protection, etc., of fortifications.	165,000.00	165,000.00			
Plans for fortifications.	5,000.00	5,000.00			
Maintenance for searchlights, etc.	40,000.00	40,000.00			
Sea walls and embankments.	25,000.00	9,878.41	15,121.59		
Preservation, etc., torpedo defenses.	20,000.00	20,000.00			
Sea-coast batteries, Philippine Islands.	300,000.00		300,000.00		
Protection, etc., fortifications, Hawaiian Islands.	1,000.00	1,000.00			
Protection, etc., torpedo defenses, Hawaiian Islands and Philippine Islands.	3,000.00	3,000.00			
Land defenses, Hawaiian Islands.	457,000.00		457,000.00		
Reserve equipment, Hawaiian Islands and Philippine Islands.	150,000.00		150,000.00		
Tools, etc., Engineer Department, Hawaiian Islands and Philippine Islands.	4,000.00	4,000.00			
Storage, electric power, water supply, Philippine Islands.	154,000.00		154,000.00		
Maps, War Department.	7,500.00	7,500.00			
	1,976,500.00	364,865.26	1,611,634.74		

TABLE NO. 1 (a).—Expenditures for the United States Military Establishment, fiscal year 1925—Continued.

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.	Deficit.
Ordnance Department:					
Ordnance Service, 1915.....	\$300,000.00	\$299,860.84	.....	\$139.16	.....
Ordnance stores, ammunition, 1914-15.....	20,658.06	5,000.00	\$15,515.12	142.94	.....
Ordnance stores, ammunition, 1915-16.....	125,000.00	40,000.00	79,156.37	5,843.63	.....
Ordnance stores and supplies, 1914-15.....	8,919.55	8,176.44	.....	743.11	.....
Ordnance stores and supplies, 1915-16.....	700,000.00	690,013.72	.....	9,986.28	.....
Small-arms target practice, 1914-15.....	24,434.76	23,710.96	.....	723.80	.....
Small-arms target practice, 1915-16.....	750,000.00	705,816.96	.....	44,183.04	.....
Manufacture of arms, 1914-15.....	9,965.62	3,000.00	6,543.62	422.00	.....
Manufacture of arms, 1915-16.....	450,000.00	30,000.00	412,179.80	7,820.20	.....
Repair of arsenals, 1915.....	290,000.00	164,872.15	124,925.43	202.42	.....
Field artillery for Organized Militia, 1913-15.....	244.07	.....	62.95	181.12	.....
Field artillery for Organized Militia, 1914-16.....	2,100,000.00	.....	2,095,952.13	4,047.87	.....
Ammunition, field artillery, Organized Militia, 1913-15.....	558.59	.....	558.59	.....	.....
Ammunition, field artillery, Organized Militia, 1914-16.....	3,000,000.00	.....	2,986,496.89	13,503.11	.....
Equipment, coast artillery armories, Organized Militia.....	10,769.51	.....	6,582.28	4,187.23	.....
Exchanging or issuing new pistols, Organized Militia.....	3,397.13	.....	3,397.13	.....	.....
Fire control at fortifications.....	221,413.71	.....	189,610.26	31,803.45	.....
Fire control in insular possessions.....	49,989.70	.....	38,554.21	11,435.49	.....
Fortifications in insular possessions.....	1,118,069.46	80,682.68	931,649.48	105,737.30	.....
Armament of fortifications.....	6,723,083.70	1,736,265.79	3,250,076.05	1,736,741.86	.....
Panama fortifications.....	463,143.89	25,595.90	338,038.61	99,509.38	.....
Armament of fortifications, Panama Canal.....	763,000.00	15,282.69	709,080.93	38,636.38	.....
Submarine mines, Panama Canal.....	48,871.70	2,938.39	34,177.66	11,755.65	.....
Submarine mines.....	460,772.73	82,144.03	150,749.47	227,879.23	.....
Submarine mines, insular possessions.....	57,882.29	11,185.65	40,153.76	6,542.88	.....
Automatic rifles.....	44,421.50	.....	450.00	43,971.50	.....
Encampment, etc., Organized Militia, 1912.....	8,963.49	2.29	.....	8,961.20	.....
Encampment, etc., Organized Militia, 1913-15.....	3,700.00	3,700.00	.....	.....	.....
Testing machines, 1915.....	15,000.00	15,000.00	.....	.....	.....
National trophy and medals.....	10,000.00	9,012.60	.....	987.40	.....
Board or Ordnance and Fortifications.....	28,924.84	26,181.91	.....	2,742.93	.....
Arsenals and proving grounds.....	396,420.44	144,142.05	248,327.22	3,951.17	.....
Expenses of officers, etc.....	42,002.88	24,795.73	.....	17,202.15	.....
	18,249,607.62	4,147,380.78	11,662,237.96	2,439,988.88	.....
Quartermaster Corps:					
Pay, etc., of the Army.....	48,229,020.02	49,229,020.02	.....	.....	\$1,000,000.00
Subsistence.....	9,802,141.39	9,802,141.39	.....	.....	.....
Mileage.....	500,000.00	493,349.89	.....	6,650.11	.....
Regulars, supplies.....	8,155,000.00	7,862,772.19	83,938.71	208,289.10	.....
Incidental expenses.....	1,954,440.00	1,927,222.83	.....	27,217.17	.....
Army transportation.....	13,117,848.97	13,004,437.07	47,061.21	66,350.69	.....
Clothing and equipage.....	6,500,000.00	5,631,765.39	225,389.95	642,844.66	.....
Waters and sewers.....	1,156,000.00	1,044,114.35	104,351.22	7,534.43	.....
Roads, walks, wharves, and drainage.....	485,000.00	281,822.26	189,640.38	13,537.36	.....
Barracks and quarters.....	2,123,997.00	1,484,994.80	602,741.94	36,260.26	.....
Military post exchanges.....	154,391.00	126,029.96	16,948.00	11,413.04	.....
Horses for Coast Artillery and engineers.....	365,285.00	365,071.37	.....	213.63	.....
Construction and repairs of hospitals.....	440,000.00	196,508.14	218,213.66	25,278.20	.....
Quarters for hospital stewards.....	9,700.00	9,095.61	.....	604.39	.....
Shooting galleries and ranges.....	40,000.00	32,958.03	6,248.83	793.14	.....
Maintenance Army War College.....	10,700.00	9,520.56	.....	1,179.44	.....

¹ Estimated; all accounts not yet received.

TABLE NO. 1 (a).—*Expenditures for the United States Military Establishment, fiscal year 1915—Continued.*

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.	Deficit.
Quartermaster Corps—Contd.					
Rent of buildings, Quartermaster Corps.....	\$45,987.00	\$44,751.35		\$1,235.65	
Barracks and quarters, Philippine Islands.....	500,000.00	345,690.98	\$154,309.02		
Construction, repair, and maintenance of roads, etc., Alaska.....	125,000.00	125,000.00			
Claims for damages to and loss of private property....	5,069.09	5,069.09			
	93,719,579.47	92,021,335.28	1,648,842.92	1,049,401.27	\$1,000,000.00
Division of Militia Affairs:					
Encampment and maneuvers, Organized Militia....	1,572,085.06	1,514,935.06	57,150.00		
Equipment, Coast Artillery armories, Organized Militia..	100,000.00		37,856.31	62,143.69	
	1,672,085.06	1,514,935.06	95,006.31	62,143.69	
U. S. Military Academy:					
Pay, permanent establishment and civil.....	768,316.29	764,816.29		3,500.00	
Expenses, Board of Visitors.....	1,000.00			1,000.00	
Contingencies for the superintendent.....	3,000.00	2,304.52		695.48	
Repairs and improvements.....	40,000.00	39,999.85		.15	
Fuel and apparatus.....	45,000.00	44,999.88		.12	
Gas pipes, gas, etc.....	6,500.00	6,500.00			
Fuel and cadets' mess hall, etc.....	10,000.00	10,000.00			
Postage and telegrams.....	375.00	375.00			
Stationery and office supplies.....	2,500.00	2,500.00			
Transportation of material, discharged cadets.....	3,850.00	3,850.00			
Printing and binding.....	1,700.00	1,699.99		.01	
Tanbark, etc.....	1,200.00	1,199.69		.31	
Camp stools, etc.....	1,200.00	1,200.00			
Gymnasium and athletic supplies.....	2,000.00	1,999.77		.23	
Repairs to saddles, etc.....	250.00	244.75		5.25	
Repairs and maintenance of searchlights.....	125.00	124.73		.27	
Repairs of mattresses, etc., Cavalry gymnasium.....	100.00	99.73		.27	
Material for hurdles.....	615.00		614.98	.02	
Purchase of typewriting machine.....	75.00		75.00		
New tent floors.....	1,500.00	1,499.94		.06	
Purchase of wax, etc.....	150.00	150.00			
Repair of mattresses, Artillery gymnasium.....	100.00	99.81		.19	
Department of civil and military engineering.....	1,200.00	1,198.15		1.85	
Department of philosophy.....	1,850.00	1,668.17		181.83	
Department of mathematics.....	725.00	725.00			
Department of chemistry.....	2,500.00	2,496.60		3.40	
Department of drawing.....	1,530.00	1,529.66		.34	
Department of modern languages.....	598.00	598.00			
Department of law.....	350.00	349.61		.39	
Department of practical military engineering.....	2,000.00	1,997.92		2.08	
Department of ordnance and gunnery, purchase of instruments.....	1,800.00	1,790.59		9.41	
Department of ordnance, gunnery, machines, etc.....	500.00	478.62		21.38	
Department of military hygiene.....	500.00	496.36		3.64	
Department of English and history.....	850.00	848.35		1.65	
Lectures for cadets.....	1,200.00	1,157.00		43.00	
Miscellaneous items and incidental expenses.....	53,430.25	50,897.89	2,373.30	159.06	
Buildings and grounds.....	39,310.00	28,809.29	9,388.80	1,111.91	
	997,899.54	978,705.16	12,452.08	6,742.30	

TABLE No. 2.—*Expenditures for the British military establishment, fiscal years 1912-13.*

[Authority appropriation account, 1912-13, with report of comptroller and auditor general.]

Vote No.	Purpose.	British currency.			United States currency.
		£	s.	d.	
1	Pay of officers and troops, etc.....	8,033,122	16	3	\$38,944,579.40
2	Pay of medical establishment.....	436,363	0	11	2,095,288.03
5	Establishment for military education.....	140,154	8	3	679,468.59
6	Quartering, transport, and remounts.....	1,696,935	17	3	8,226,745.06
7	Supplies.....	3,207,704	5	1	15,550,950.22
7	Clothing.....	936,133	18	8	4,538,377.31
7	Clothing factories.....	270,271	1	6	1,310,274.17
8	Ordnance establishment and general stores.....	658,579	15	7	3,192,794.77
9	Armaments, aviation, and engineer stores.....	1,762,664	14	1	8,545,398.49
10	Works and buildings.....	1,565,955	13	7	7,591,753.13
.....	Repayment under military works acts.....	878,998	15	11	4,261,386.16
11	Miscellaneous effective services.....	67,904	6	6	329,200.17
12	War office.....	435,962	11	7	2,113,546.58
13	Half pay, retired pay, and other noneffective charges for officers.....	1,581,339	13	10	7,666,334.83
13	Pensions for wounds.....	29,657	0	8	143,777.30
14	In-pensions, out-pensions, and rewards for distinguished services.....	1,871,831	6	11	9,074,638.36
	Total expenditures.....				114,264,512.57
	Deduct repayment under military works acts.....				4,261,386.16
	Cost of permanent structures, vote 10.....				1,623,461.21
					5,884,847.37
	Total expenditures for maintenance, etc.....				108,379,665.20

TABLE No. 2a.—*Expenditures for the British military establishment 1912-13.*

Purpose.	Appropriations in aid.			Gross expenditures.			Net expenditures.		
	£	s.	d.	£	s.	d.	£	s.	d.
VOTE 1.									
Pay, etc., Department I. G.....				13,189	7	6			
Pay, etc., staff of commands, etc.....				329,320	7	1			
Regular pay, extra pay, messing allowance.....				7,159,391	9	8			
Regular allowances, etc.....				145,987	12	0			
Recruiting staff and expenses.....				34,137	9	9			
Gratuities and deferred pay to soldiers on discharge.....				259,858	19	2			
Field training.....				208,085	11	4			
Pay, etc., of staff of cavalry, etc., schools.....				37,994	12	10			
Pay, etc., of establishment of schools of gunnery.....				29,700	4	9			
Pay, etc., of establishment of schools of engineering.....				23,497	15	4			
Pay, etc., of establishment of schools of musketry.....				16,969	16	11			
Pay, etc., of establishment of gymnasium, instructions.....				16,011	15	7			
Pay, etc., army reserve.....				1,303,401	13	7			
Pay, etc., chaplain department.....				68,614	14	6			
Pay, etc., army veteran service.....				45,655	16	1			
Pay, etc., pay department.....				99,104	12	11			
Pay, etc., establishment, J. A. G.....				3,747	18	0			
Pay, etc., establishment, military prisoners.....				18,209	3	2			
Rewards, etc., appropriation, deserters.....				2,354	15	2			
Wages of civilians attached to units.....				31,127	6	7			
Expenses of native Indian troops.....				251,576	18	4			
Miscellaneous.....				98	3	1			
Vote 1.....	761,511	13	6	10,098,036	3	4	9,336,524	9	10
Deduct pay-army reserve.....							1,303,401	13	7
Net expenditures, vote 1.....							8,033,122	16	3

TABLE NO. 2a.—Expenditures for the British military establishment 1912-13—Continued.

Purpose.	Appropriations in aid.			Gross expenditures.			Net expenditures.		
VOTE 2.	£	s.	d.	£	s.	d.	£	s.	d.
Pay, etc., medical establishment.....	2,271	1	9	438,634	2	8	436,363	0	11
VOTE 5.									
Establishment for military education.....	91,096	17	6	231,251	5	9	140,154	8	3
VOTE 6.									
Lodging and stable allowances.....				269,913	7	2			
Field allowances.....				26,502	7	0			
Hire of buildings to supplement barracks...				62,909	0	5			
Barracks, services.....				95,463	6	0			
Conveyance of troops by land and coastwise.....	592	1	5	357,885	3	7			
Sea transport of troops.....	7,892	9	9	298,665	15	11			
Railroad stores.....				1,994	12	3			
Miscellaneous.....	3,835	7	9						
	12,319	18	11	1,113,333	12	4	1,101,013	13	5
Carriage of stores.....				190,709	11	0			
War Department vessels.....				68,510	1	3			
Pay wages, etc., A. S. C.....				165,797	0	5			
Mechanical transport vehicles.....				63,570	15	10			
Remounts.....				194,292	18	8			
	86,958	3	4	862,880	7	2	595,922	3	10
VOTE 7.									
Supplies.....	56,539	14	5	3,264,243	19	6	3,207,704	5	1
Clothing.....	102,669	18	9	1,038,803	17	5	936,133	18	8
Clothing factory.....	7,756	4	5	278,027	5	11	270,271	1	6
VOTE 8.									
Ordnance Department establishment and general stores.....	214,527	4	3	873,106	19	10	658,579	15	7
VOTE 9.									
Armaments, aviation and engineer stores...	272,104	4	2	2,134,768	18	3	1,762,664	14	1
VOTE 10.									
Staff for works and engineer services.....				186,726	19	1			
Incidental expenses of war department establishments.....	580	16	4						
Telegraph and telephone services.....	53,860	1	8	22,875	7	3			
Miscellaneous engineer services.....	12,104	9	11	20,786	17	8			
New works.....				16,400	9	3			
Compensation to contractors.....				525,644	3	5			
New works, part 2.....				324	17	11			
Compensation to contractors.....				212,464	2	8			
Ordinary repairs, etc.....	3,170	18	3	1,121	16	0			
Grants in aid of works.....				525,835	9	7			
Purchases of land.....	40,506	1	10	9,660	14	9			
Rents of land and buildings.....				111,625	13	10			
				42,711	10	2			
	110,222	8	0	1,676,178	1	7	1,565,955	13	7
Repayment under military works act.....							878,998	15	11
VOTE 11.									
Miscellaneous effective services.....	1,321	6	0	69,225	12	6	67,904	6	6
VOTE 12.									
War office.....	620	19	3	436,583	10	10	435,962	11	7
VOTE 13.									
Half pay, retired pay, and other noneffective charges for officers.....	504,485	6	0	2,085,824	19	10	1,581,339	13	10
Pensions for wounds.....							29,657	0	8
VOTE 14.									
In-pensions.....				32,351	16	2			
Out-pensions.....				2,347,117	7	4			
Rewards for distinguished services.....				20,406	8	5			
	528,044	5	0	2,399,875	11	11	1,871,831	6	11

TABLE NO. 3.—*Items not properly chargeable to the cost of the Regular Army of the United States.*

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.
Office Chief Signal Officer:				
Washington-Alaska military cable and telegraph system, 1914-1915.....	\$47,559.87	.....	\$47,559.87	.....
Washington-Alaska military cable and telegraph system, 1915.....	50,000.00	.....	50,000.00	.....
Equipment Coast Artillery armories, Organized Militia.....	17,068.98	.....	17,068.98	.....
Repairs deep-sea military cables.....	21,446.07	\$15,455.00	.....	\$5,991.07
Medical Department:				
Army Medical Museum.....	5,000.00	2,731.17	.....	2,268.83
Artificial limbs.....	275,000.00	229,846.39	.....	45,153.61
Trusses for disabled soldiers.....	3,500.00	1,833.08	.....	1,666.92
Appliances for disabled soldiers.....	1,500.00	764.40	.....	735.60
Ordnance Department:				
Field Artillery for Organized Militia—				
1913-1915.....	244.07	.....	62.95	181.12
1914-1916.....	2,100,000.00	.....	2,095,952.13	4,047.87
Ammunition, Field Artillery Organized Militia—				
1913-1915.....	558.59	.....	558.59	.....
1914-1916.....	3,000,000.00	.....	2,986,496.89	13,503.11
Equipment Coast Artillery armories, Organized Militia.....	10,769.51	.....	6,582.28	4,187.23
Encampment, etc., Organized Militia—				
1912.....	8,963.49	2.29	.....	8,961.20
1913-1915.....	3,700.00	3,700.00	.....	.....
National trophy and medals.....	10,000.00	9,012.60	.....	987.40
Alaskan Road Commission:				
Construction and repair of Alaskan roads, etc.	125,000.00	125,000.00	.....	.....
Engineer Department:				
Civilian assistants to engineer officers.....	40,000.00	40,000.00	.....	.....
Division of Militia Affairs:				
Encampment and maneuvers, Organized Militia.....	1,572,085.06	1,514,935.06	57,150.00	.....
Equipment Coast Artillery armories, Organized Militia.....	100,000.00	37,856.31	.....	62,143.69
	7,392,395.64	1,981,136.30	5,261,431.69	149,827.65
		5,261,431.69		
		7,242,567.99		
Pay and allowances of officers and enlisted men on duty not connected with Regular Army.....		1,138,322.68		
		8,380,890.67		

TABLE No. 3 (a).—Officers and enlisted men, paid from Army appropriations, on duty that is not connected with the Regular Army.

Grades.	Officers of Engineers, riv- ers, harbors, etc.	Division of Militia Af- fairs.	Bureau of Insular Af- fairs.	With Organized Militia.	With civil educational institutions.	Alaskan Road Commis- sion.	Yellowstone National Park.	With Philippine Gov- ernment.	Panama Canal.	Doorkeeper to the Presi- dent.	At White House.	With American Red Cross.	United States Soldiers' Home.	Panama-Pacific Expo- sition.	Relief work in Europe.	Alaskan Engineering (Commission).	Totals by grades.	Number of months on duty (estimated).	Number of logies (as- sumed).	Yearly rates of pay.	Total pay by grades.	Yearly rates of commu- tation for quarters.	Totals, commutation for quarters by grades.	Yearly rates of commu- tation for light.	Totals, commutation for light.	Totals, pay, quarters, and light by grades.
Major general.....	1 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	38,000	\$8,000	\$1,296	\$1,296	\$45.00	\$45.00	\$9,341.00	
Brigadier generals.....	1 1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	6,000	9,000	1,152	1,843.20	42.12	67.39	11,510.59	
Colonels.....	2 7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	4,500	49,500	1,008	9,979.20	37.44	376.65	59,849.85	
Lieutenant colonels.....	1 13	5	1	4	3	3	1	3	1	1	1	1	1	1	1	1	1	12	4,500	35,100	844	9,331.00	30.96	345.33	44,796.93	
Majors.....	3 15	5	1	6 19	6 3	3	1	3	1	1	1	1	1	1	1	1	1	12	4,000	172,200	720	31,396.00	27.00	1,162.35	204,758.35	
Captains.....	4 4	2	2	64	17	2	2	2	2	2	2	2	2	2	2	2	96	94-12 2-6	3	3,120	291,408	576	53,844.48	22.32	2,086.47	347,338.95
First lieutenants.....	6 10	1	1	41	51	1	2	2	7	2	1	1	1	1	1	1	110	108-12 2-6	2	2,400	235,200	432	44,596.00	19.80	2,041.40	281,837.40
Second lieutenants.....					11		2		1								16	13-12 3-6	1	1,870	27,115	288	4,176.00	14.04	203.58	31,494.58
Sergeants.....				183			27				1						211	12	2	396	83,556	144	30,384.00	10.80	2,278.80	116,218.80
	50	10	2	311	82	2	34	3	3	3	1	1	3	7	2	1	513			911,679			186,846.48		\$,620.97	1,107,146.45

RECAPITULATION.

Pay.....	\$911,679.00
Commutation for quarters.....	186,846.48
Commutation for heat.....	43,104.85
Commutation for light.....	8,620.97
Less 15 per cent of commutation for quarters, heat, and light ⁸	1,150,251.30
Total cost to United States.....	11,928.62
	1,138,322.68

¹ 60 per cent of time devoted to civil works; pay, etc., figured accordingly.² 70 per cent of time devoted to civil works; pay, etc., figured accordingly.³ 67 per cent of time devoted to civil works; pay, etc., figured accordingly.⁴ 62 per cent of time devoted to civil works; pay, etc., figured accordingly.⁵ 40 per cent of time devoted to civil works; pay, etc., figured accordingly.⁶ Includes retired officers of higher grade who draw active pay, etc., of majors.⁷ Assumed on duty at exposition from Jan. 1 to June 30, 1915, 6 months.⁸ Some officers do not occupy full allowances of quarters; 15 per cent of commutation for quarters, heat, and light is deducted to cover such cases.

WAR DEPARTMENT,
WAR COLLEGE DIVISION, OFFICE OF THE CHIEF OF STAFF,
Washington, October 1, 1915.

Memorandum for The Adjutant General of the Army:

Subject: Table showing authorized strength of the Military Establishment on July 1, 1915.

The Secretary of War directs that, if the data are available, the following table be filled out and returned to the Chief of the War College Division. This information is necessary for use in preparing a study by order of the Secretary of War.

TABLE NO. 4.—*Actual strength of the Military Establishment on July 1, 1915.*

Branches of service.	Officers.	Enlisted men.	Aggregate.
General officers.....	25	.....	25
Adjutant General's Department.....	23	.....	23
Inspector General's Department.....	17	.....	17
Judge Advocate General's Department.....	12	.....	12
Quartermaster Corps.....	185	1 404	589
Medical Department.....	² 553	.....	553
Corps of Engineers.....	207	1,948	2,155
Ordnance Department.....	85	740	825
Signal Corps.....	63	1,371	1,434
Bureau of Insular Affairs.....	3	.....	3
Professors, United States Military Academy.....	7	.....	7
Chaplains.....	64	.....	64
Cavalry.....	778	14,646	15,424
Field Artillery.....	262	5,664	5,926
Coast Artillery Corps.....	728	19,185	19,913
Infantry.....	1,572	35,537	37,109
Porto Rico Regiment of Infantry.....	31	586	617
United States Military Academy detachments.....	.....	623	623
Recruiting parties, recruit depots, and unassigned recruits.....	.....	5,757	5,757
United States military prison guards.....	.....	317	317
Service-school detachments.....	.....	582	582
With disciplinary organizations.....	(In arm of service.)		
Indian scouts.....	.....	24	24
Philippine Scouts.....	182	5,430	5,612
Total, Army.....	4,797	92,814	97,611
Hospital Corps (Medical Department) ³.....	.....	3,993	3,993
Quartermaster Corps (Quartermaster Department) ³.....	.....	4,388	4,388
Total, military establishment.....	4,797	101,195	105,992

¹ Quartermaster sergeants.

² Includes 97 officers of the Medical Reserve Corps assigned to active duty under the provisions of the act of Congress approved Apr. 23, 1903 (35 Stat. L., 66).

³ Not included in the enlisted strength of the Army.

M. M. MACOMB,
Brigadier General, Chief of War College Division.
Assistant to the Chief of Staff.

TABLE No. 5.—Average rates of pay and allowances of comparable grades of commissioned officers of the armies of the United States and Great Britain

United States Army.	British Army.
	Field marshal..... ¹ \$12,604.80 to
	General.....19,392.00
Lieutenant general..... ¹ \$11,000.00	Lieutenant general..... ¹ 7,756.80
Major general..... ¹ 8,000.00	Major general..... ¹ 6,302.40
Brigadier general..... ¹ 6,000.00	Brigadier general..... ¹ 4,848.00
Surgeon General (major general).....9,566.00	Surgeon general.....7,019.00
Colonel.....5,232.64	Colonel.....4,535.79
Lieutenant colonel.....4,549.76	Lieutenant colonel.....3,224.05
Major.....3,882.00	Major.....2,167.81
Captain.....3,009.92	Captain.....1,640.17
First lieutenant.....2,550.80	First lieutenant.....1,197.73
Second lieutenant.....2,072.24	Second lieutenant.....895.53
Chaplain with rank of major.....3,882.00	Chaplain, first class.....2,479.71
Chaplain with rank of major, after 5 years' service.....4,182.00	Chaplain, first class, after 5 years as such.....2,700.90
Chaplain with rank of captain.....3,009.92	Chaplain, second class.....2,443.02
Chaplain with rank of first lieutenant.....2,550.80	Chaplain, third class.....1,877.59
Veterinarian (pay, etc. of second lieutenant).....2,072.24	Veterinary officer, pay, etc., of first lieutenant.....1,929.62
First lieutenant, Medical Reserve Corps.....2,550.80	First lieutenant, medical department, on probation.....1,725.70
Additional to captain while adjutant.....	Additional to captain while adjutant....294.92
Additional to first lieutenant while adjutant.....	Additional to first lieutenant while adjutant.....331.78

¹ Represents only base pay.

Quartermaster (minimum).....	1, 211.19	1, 182.21	1, 093.64	1, 093.64	1, 788.15	1, 078.49	1, 182.11	1, 270.59	1, 137.88	.....	\$1, 200.09	1, 233.76
Quartermaster (maximum).....	1, 837.57	1, 784.24	1, 695.77	1, 695.77	1, 961.20	1, 195.82	(?)1,784.25	2, 010.30	1, 877.59	.....	1, 901.81	1, 774.43
Riding master (minimum).....	1, 211.19	1, 182.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 191.87
Riding master (maximum).....	1, 837.57	1, 784.24	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 802.02
Chief paymaster.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4, 006.92
Staff paymaster.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 536.21
Staff paymaster after 5 years.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 536.21
Paymaster (minimum).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 806.59
Paymaster (maximum).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 226.35
Assistant paymaster (minimum).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 319.97
Assistant paymaster (maximum).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 137.88
Principal ordnance officer.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 877.59
Ordnance officer, first class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6, 790.84
Ordnance officer, second class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4, 005.92
Ordnance officer, third class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4, 005.92
Ordnance officer, fourth class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3, 447.94
Commissary of ordnance, 10 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3, 049.90
Commissary of ordnance, 15 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 423.21
Commissary of ordnance, 15 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 966.07
Commissary of ordnance, 20 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 098.78
Deputy commissary, 5 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 231.49
Deputy commissary, 10 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 626.93
Deputy commissary, 15 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 759.64
Assistant commissary.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 892.36
Assistant commissary, 5 years' commissioned service.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 314.83
Chief inspector of ordnance machinery.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 447.54
Inspector of ordnance machinery, first-class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 861.80
Inspector of ordnance machinery, second class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 585.40
Inspector of ordnance machinery, second class, after 5 years as such.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 025.07
Inspector of ordnance machinery, third class.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 206.26
Inspector of ordnance machinery, third class, after 5 years as such.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 491.78
Commanding officer.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 712.97
Squadron commander.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4, 232.30
Flight commander.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3, 273.19
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 474.45

¹ Represents pay only; no data as to allowances available.

TABLE No. 5a.—*Pay and principal allowance of officers of the British Army at home—Continued.*

Rank or class.	Cavalry of the line— Table 5 (a) a.	Horse artil- lery— Table 5 (a) b.	Field artil- lery— Table 5 (a) c.	Garrison artil- lery— Table 5 (a) d.	Engi- neers— Table 5 (a) e.	Infantry of the line— Table 5 (a) f.	Army service corps— Table 5 (a) g.	Veteri- nary officers— Table 5 (a) h.	Medical officers— Table 5 (a) i.	Pay depart- ment— Table 5 (a) j.	Ordnance depart- ment— Table 5 (a) k.	Military fly- ing wing— Table 5 (a) l.	Chap- lains— Table 5 (a) m.	General offi- cers 1— Table 5 (a) n.	Average pay, etc., by grades or positions.
Flying officer.....												\$2,009.95			\$2,009.95
Adjutant.....												2,474.45			2,474.45
Chaplain, first class, after 5 years as such.....												2,479.71	\$2,479.71		2,479.71
Chaplain, second class.....												2,700.90	2,700.90		2,700.90
Chaplain, third class.....												2,143.02	2,143.02		2,143.02
Chaplain, fourth class.....												1,877.59	1,877.59		1,877.59
Chaplain, fourth class, after 5 years as such.....												1,317.26	1,317.26		1,317.26
Chaplain on probation.....												1,538.45	1,538.45		1,538.45
												878.76	878.76		878.76

TABLE No. 5a (a).—*Pay and allowances of officers of the British Army serving at home, 1913-14.*

[Authority: Army estimates, Great Britain, 1913-14.]

Cavalry of the line.	Regimental pay.		Mess allowance. ¹	Allowance for private horses in excess of public horses allowed. ²		Lodging allowance.		Fuel and light allowance.		Total pay and allowances.	Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	
Lieutenant colonel.....	447	2 6	.....	.....	41	1 3	73	0 0	18	4 10	£3,074 50
Command pay.....	54	15 0	.....	.....	.....	.....	.....	.....	.....	.....	1,680 62
Major.....	273	15 0	.....	.....	.....	.....	54	15 0	12	3 3	1,857 57
Major, after 2 years as such.....	310	5 0	6	.....	.....	.....	54	15 0	12	3 3	1,884 48
Major, additional if on duty as senior major.....	18	5 0	.....	.....	.....	.....	.....	.....	.....	.....	1,412 74
Captain.....	237	5 0	6	.....	.....	.....	41	1 3	7	1 10½	1,589 69
Captain, brevet major.....	273	15 0	6	.....	.....	.....	41	1 3	7	1 10½	1,442 38
Captain, additional if adjutant.....	91	5 0	.....	.....	.....	.....	.....	.....	.....	.....	918 70
Lieutenant.....	139	18 4	6	.....	.....	.....	36	10 0	7	1 10½	982 98
Lieutenant, after 7 years.....	158	3 4	6	.....	.....	.....	36	10 0	7	1 10½	442 38
Lieutenant, additional if adjutant.....	91	5 0	.....	.....	.....	.....	.....	.....	.....	.....	810 28
Second lieutenant.....	121	13 4	.....	.....	.....	.....	36	10 0	7	1 10½	1,211 10
Quartermaster (minimum) ³	191	12 6	6	.....	.....	.....	41	1 3	11	2 11½	1,857 57
Quartermaster (maximum) ³	301	2 6	6	.....	.....	.....	54	15 0	12	3 3	1,211 10
Riding master (minimum) ³	191	12 6	6	.....	.....	.....	41	1 3	11	2 11½	249 16 8½
Riding master (maximum) ³	301	2 6	6	.....	.....	.....	54	15 0	12	3 3	274 0 9

¹ Mess allowance is issued per squadron or depot, but when granted personally is \$20.08 per year.² Each officer, excepting quartermasters and riding masters, are allowed 2 public horses at a cost to the government of \$388.44 per year. Quartermasters and riding masters are allowed 1 public horse at a cost to the government of \$184.22 per year.³ Quartermasters and riding masters receive 5-year increase of 36 cents per day up to a maximum of \$4 per day after 20 years' service.
NOTE.—Each dismounted officer is allowed 1, and each mounted officer 2, soldier-servants.

TABLE No. 5a (b).—*Pay and allowances of officers of the British Army serving at home, 1913-14.*

Horse artillery.	Regimental pay.	Mess allowance.	Allowances for private horses in excess of public horses allowed.		Lodging allowance.	Fuel and light allowance.	Total pay and allowances.	Total in United States currency.
	£ s. d.	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
Lieutenant colonel ¹	451 13 9		41 1 3	73 0 0		18 4 10	638 14 10	\$3,096.62
Command pay ²	54 15 0							
Major ¹	337 12 6			54 15 0		12 3 3	404 10 9	1,961.20
Captain ¹	273 15 0	6		41 1 3		7 5 10½	327 18 1½	1,599.69
Captain, if with brevet rank ¹	310 5 0	6		41 1 3		7 1 10½	364 8 1½	1,766.61
Captain, additional if adjutant ¹	45 12 6						45 12 6	1,221.19
Lieutenant ¹	163 4 2	6		36 10 0		7 1 10½	210 16 1½	1,021.97
Lieutenant, after 7 years ¹	179 9 2	6		36 10 0		7 1 10½	229 1 1½	1,110.41
Lieutenant, additional if adjutant ¹	45 12 6						45 12 6	1,221.19
Second lieutenant ¹	139 18 4	6		36 10 0		7 1 10½	189 10 2½	918.75
Quartermaster (minimum) ^{3 4}	191 12 6			41 1 3		11 2 11½	243 16 8½	1,182.21
Quartermaster (maximum) ^{3 4}	301 2 6			54 15 0		12 3 3	368 0 9	1,784.21
Riding master (minimum) ^{3 4}	191 12 6			41 1 3		11 2 11½	243 16 8½	1,182.11
Riding master (maximum) ^{3 4}	301 2 6			54 15 0		12 3 3	368 0 9	1,784.24

¹ Allowed 2 public horses, at a cost of about \$368.44 per annum.² Based on 72 cents a day. ³ Certain lieutenant colonels may receive command pay, at \$1.21 a day.⁴ Allowed 1 public horse, at a cost of about \$184.22 per annum.⁵ Quartermasters and riding masters receive quinquennial increases of pay of 36 cents a day, up to a maximum of \$4 a day (quartermasters, field artillery, \$3.76 a day), after 20 years' commissioned service.

NOTE.—Officers generally are allowed 1 soldier-servant; mounted officers are allowed 2.

TABLE No. 5a (c).

Field artillery.	Regimental pay.	Mess allowance.	Allowances for private horses in excess of public horses allowed.			Lodging allowance.			Fuel and light allowance.			Total pay and allowances.	Total in United States currency.
	£ s. d.	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		
Lieutenant colonel ¹	419 15 0		41 1 3			73 0 0			18 4 10			606 16 1	\$2,941.79
Command pay ²	54 15 0												
Major ¹	292 0 0		41 1 3			54 15 0			12 3 3			399 19 6	1,939.08
Captain ¹	211 7 11					41 1 3			7 1 10½			295 11 ½	1,287.40
Captain, if with brevet rank ¹	247 17 11					41 1 3			7 1 10½			302 1 ½	1,434.65
Captain, additional, if adjutant ¹	45 12 6											45 12 6	1,221.19
Lieutenant ¹	124 14 2					36 10 0			7 1 10½			174 6 ½	845.02
Lieutenant, after 7 years ³	142 19 2					36 10 0			7 1 10½			192 11 9	933.49
Second lieutenant ¹	101 17 11					36 10 0			7 1 10½			151 9 9½	734.42
Quartermaster (minimum) ⁴	173 7 6					41 1 3			11 2 11½			225 11 8½	1,093.64
Quartermaster (maximum) ⁴	252 17 6					54 15 0			12 3 3			349 15 9	1,665.77
Riding master (minimum) ¹⁴	191 12 6					41 1 3			11 2 11½			243 16 8½	1,192.11
Riding master (maximum) ¹⁴	301 2 6					54 15 0			12 3 3			368 0 9	1,784.25

¹ Allowed 1 public horse at a cost of about \$184.22 per annum.² Based on 72 cents a day; certain lieutenant colonels may receive command pay at \$1.21 a day.³ Allowed 2 public horses at a cost of about \$86.44 per annum.⁴ Quartermasters and riding masters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$4 a day (quartermasters, field artillery, \$3.76 a day), after 20 years' commissioned service.

NOTE.—Officers generally are allowed 1 soldier servant; mounted officers are allowed 2.

TABLE No. 5a (d).—Pay and allowances of officers of the British Army serving at home, 1913-14.

Garrison artillery.	Regimental pay.	Armament pay.	Mess allowance.	Forage and stable allowance.	Lodging allowance.	Fuel and light allowance.	Total pay and allowances.			Total in United States currency.
	£ s. d.	£ s. d.	£	£ s. d.	£ s. d.	£ s. d.	£	s.	d.	
Lieutenant colonel ¹	335 17 6	91 5 0	.....	41 1 3	73 0 0	18 4 10	634 3 7			\$3,074.50
Command pay ²	54 15 0	63 17 6	.....	.....	54 15 0	12 3 3	422 15 9			2,049.67
Major ¹	202 0 0	54 15 0	.....	.....	41 1 3	7 1 10½	320 6 ½			1,554.04
Captain.....	211 7 11	54 15 0	6	.....	41 1 3	7 1 10½	336 16 ½			1,720.78
Captain, if with brevet rank.....	247 17 11	54 15 0	6	.....	.....	.....	45 12 6			221.19
Captain, additional, if adjutant ¹	45 12 6	.....	.....	.....	.....	.....	210 16 ½			1,021.97
Lieutenant.....	124 14 2	36 10 0	6	.....	36 10 0	7 1 10½	220 1 ½			1,110.44
Lieutenant, after 7 years.....	142 19 2	36 10 0	6	.....	36 10 0	7 1 10½	45 15 6			221.19
Lieutenant, additional, if adjutant ¹	45 12 6	.....	.....	.....	.....	.....	187 19 9½			908.95
Second lieutenant.....	101 17 11	36 10 0	6	.....	41 1 3	11 2 11½	225 11 8½			1,093.64
Quartermaster (minimum) ⁴	173 7 6	.....	.....	.....	54 15 0	12 3 3	349 15 9			1,695.77
Quartermaster (maximum) ⁴	282 17 6	.....	.....	.....	.....	.....	.....			.....

¹ Allowed 1 public horse at a cost of about \$184.22 per annum.² Based on 72 cents a day; certain lieutenant colonels may receive command pay at \$1.21 a day.³ Not issued to second lieutenants until they have certificates of proficiency in garrison artillery duties.⁴ Quartermasters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$3.76 a day after 20 years' commissioned service.

NOTE.—Officers generally allowed 1 soldier servant; mounted officer allowed 2. Commutation amounts to about \$38.48 per servant per annum.

Engineers.	Regimental pay.			Engineer pay.			Mess allowance.	Servant allowance. ¹			Lodging allowance.			Fuel and light allowance.			Forage and stabling allowance. ¹			Total pay and allowance.			Total in United States currency.
	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	
Lieutenant colonel.....	328	10	0					36	10	0	73	0	0	18	4	10	41	1	3	807	11	1	\$3,915.02
Command pay ²	54	15	0																				2,713.24
Major.....	292	7	11		164	5	0	36	10	0	54	15	0	2	3	3				559	13	3	1,906.73
Captain.....	211				109	10	0	18	5	0	41	1	3	7	1	10½				393	6	½	2,083.03
Captain, if with brevet rank.....	247	17	11		109	10	0	18	5	0	41	1	3	7	1	10½				429	16	½	2,221.19
Captain, additional if adjutant.....	45	12	6																	45	12	6	
Lieutenant, under instruction.....	124	14	2		36	10	0	18	5	0	36	10	0	7	1	10½				229	1	10½	21,110.65
Lieutenant.....	124	14	2		73	0	0	6	18	5	36	10	0	7	1	10½				263	11	½	1,587.40
Lieutenant, after 7 years.....	142	19	3		73	0	0	6	18	5	36	10	0	7	1	10½				283	16	¾	1,577.87
Second lieutenant, under instruction.....	101	17	11		36	10	0	6	18	5	36	10	0	7	1	10½				206	4	9½	1,999.85
Second lieutenant, after passing engineer school.....	101	17	11		73	0	0	6	18	5	36	10	0	7	1	10½				242	14	9½	1,176.80
Quartermaster (minimum) ³	173	7	6		36	10	0	6	18	5	41	1	3	11	2	11½				286	6	8½	1,788.15
Quartermaster (maximum) ³	282	17	6		36	10	0		18	5	54	15	0	12	3	3				404	10	9	1,961.20

¹ Officers whose duties require them to keep a horse may be allowed a public horse costing about \$184.22 and servant allowance for two servants.

² Equals 73 cents a day. At certain stations command pay is at rate of \$1.21 a day.

³ Quartermasters receive quinquennial increase of pay of 36 cents a day up to a maximum of \$3.76 a day after 20 years' service.

TABLE No. 5a (f).—Pay and allowances of officers of the British Army serving at home, 1913-14.

Infantry of the line.	Regimental pay.		Mess allowance.		Lodging allowance.		Fuel and light allowance.		Forage and stabling allowance. ¹		Total pay and allowance.		Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	
Lieutenant colonel.....	419	15 0			73	0 0	18	4 10	41	1 3	606	16 1	\$2,941. 79
Command pay.....	54	15 0									320	16 2	1,555. 28
Major.....	247	17 11			54	15 0	12	3 3			364	18 3	1,760. 10
Major, after 2 years.....	292	0 0			54	15 0	12	3 3			18	5 0	88. 48
Major, if senior major, additional.....	18	5 0									265	11 4	1,287. 40
Captain.....	211	7 11			41	1 3	7	1 10½			302	1 4	1,461. 35
Captain, if with brevet rank.....	247	17 11			41	3 6	7	1 10½			91	5 0	1,422. 38
Captain, additional if adjutant.....	91	5 0									168	4 4½	815. 52
Lieutenant.....	118	12 6			36	10 0	7	1 10½			186	9 4½	904. 00
Lieutenant, after 7 years as such.....	136	17 6			36	10 0	7	1 10½			91	5 0	422. 38
Lieutenant, additional if adjutant.....	91	5 0									135	8 1½	701. 93
Second lieutenant.....	95	15 3			36	10 0	7	1 10½			222	9 2½	1,078. 49
Quartermaster (minimum) ²	164	5 0			41	1 3	11	2 11½			246	13 3	1,195. 82
Quartermaster (maximum) ²	273	15 0			54	15 0	12	3 3					

¹ Allowance for private horses only; lieutenant colonels, majors, and captains and lieutenants while adjutants are allowed an addition, 1 public horse each, the cost of maintenance of which is stated at \$184.22 per annum.

² Quartermasters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$3.64 per day after 20 years' service.

NOTE.—Officers, as a rule, are allowed a soldier servant; and mounted officers are allowed 2 soldier servants.

TABLE No. 5a (g).

Army service corps.	Regimental pay.		Corps pay.		Servant allowance.		Mess allowance.		Lodging allowance.		Fuel and light allowance.		Total pay and allowances.		Total in United States currency.
	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	
Lieutenant colonel ¹ 2.	328	10 0	109	10 0	18	5 0	.....	.....	73	0 0	18	4 10	3 043	6 1	\$3, 123. 16
Command pay.....	54	15 0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 086. 54
Major ¹	247	17 11	97	6 8	18	5 0	.....	.....	54	15 0	12	3 3	430	7 10	2, 300. 36
Major, after 2 years as such.....	292	0 0	97	6 8	18	5 0	.....	.....	54	15 0	12	3 3	474	9 11	1, 729. 78
Captain ⁴	211	7 11	73	0 0	18	5 0	6	.....	41	1 3	7	1 10½	356	16 ½	1, 906. 72
Captain, if with brevet rank.....	247	17 11	73	0 0	18	5 0	6	.....	41	1 3	7	1 10½	393	6 10½	1, 213. 67
Lieutenant ⁴	118	12 6	63	17 6	18	5 0	6	.....	36	10 0	7	1 10½	250	11 10½	1, 302. 14
Lieutenant, after 7 years as such.....	136	17 6	63	17 6	18	5 0	6	.....	36	10 0	7	1 10½	209	5 7½	1, 014. 60
Second lieutenant ⁴	95	16 3	45	12 6	18	5 0	6	.....	41	1 3	11	2 11½	249	16 8½	1, 182. 11
Quartermaster (minimum) ⁵	173	7 6	.....	.....	18	5 0	.....	.....	54	15 0	12	3 3	368	0 9	1, 784. 25
Quartermaster (maximum) ⁵	282	17 6	.....	.....	18	5 0	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Furnished 1 public horse at expense to Government of \$184.22 per horse per annum.

² Includes £41 1s. 3d. forage and stabling allowance.

³ Includes forage allowance for private horses at \$198.97 per annum.

⁴ Furnished 1 public horse at expense to Government of \$184.22 per horse per annum, when duty requires officer to be mounted.

⁵ Quartermasters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$3.76.

TABLE No. 5a (h).

Veterinary officers.	Pay. ¹		Servant allow- ance.		Lodging allow- ance.		Fuel and light allowance.		Forage and stabling allow- ance.		Total pay and allowances.		Total in United States currency.
	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	£.	s. d.	
Colonel.....	638	15 0	18 5 0		100	7 6	27 17 4		77 11 3		862 16 1		\$4, 182. 87
Lieutenant Colonel.....	547	10 0	18 5 0		82	2 6	22 5 10		77 11 3		747 14 7		3, 624. 99
Major.....	365	0 0	18 5 0		73	0 0	22 5 10		77 11 3		556 2 1		2, 695. 99
Major, after 5 years as such.....	401	10 0	18 5 0		73	0 0	22 5 10		77 11 3		592 12 1		2, 872. 95
Major, after 10 years as such.....	438	0 0	18 5 0		73	0 0	22 5 10		77 11 3		629 2 1		3, 043. 90
Captain ²	282	17 6	18 5 0		54	15 0	16 4 3		77 11 3		449 13 0		2, 179. 90
Captain, after 5 years as such.....	.....	.....	.....		.....	.....	.....		.....		.....		.....
Captain, after 3 years service abroad.....	319	7 6	18 5 0		54	15 0	16 4 3		77 11 3		486 3 0		2, 356. 86
Lieutenant.....	250	0 0	18 5 0		41	1 3	11 2 11½		77 11 13		398 0 5½		1, 929. 62
Quartermaster (minimum) ³	191	12 6	18 5 0		41	1 3	11 2 11½		.....		262 1 8½		1, 270. 59
Quartermaster (maximum) ³	301	2 6	18 5 0		73	0 0	22 5 10		.....		414 13 4		2, 010. 30

¹ Certain veterinary officers receive charge pay at 53 cents a day in addition.

² A captain holding brevet rank of major receives pay at 48 cents a day in addition.

³ Quartermasters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$3.80 a day after 20 years' service.

TABLE No. 5a (i) Pay and allowances of officers of the British Army serving at home, 1913-14.

Medical officers.	Pay. ¹		Servant allowance.		Lodging allowance.		Fuel and light allowance.		Forage and stabling allowance.		Total pay allowance.	Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.		
Surgeon general.....	1,095	0 0	36	10 0	200	15 0	38	0 0	77	11 3	£ 1,447 16 3	\$7,019.00
Colonel.....	821	5 0	18	5 0	100	7 6	27	17 4	41	1 3	£ 1,008 16 1	4,888.68
Lieutenant colonel promoted before Jan. 9, 1907, if specially selected for increased pay after 8 years' foreign service.....	638	15 0	18	5 0	82	2 6	22	5 10	41	1 3	£ 802 9 7	3,870.20
Lieutenant colonel after 3 years, if promoted on or after Jan. 9, 1907.....	547	10 0	18	5 0	82	2 6	22	5 10	41	1 3	£ 711 4 7	3,448.04
Major.....	428	17 6	18	5 0	73	0 0	22	5 10	41	1 3	£ 583 9 7	2,828.71
Major, after 3 years' service as such.....	474	10 0	18	5 0	73	0 0	22	5 10	41	1 3	£ 629 2 1	3,049.90
Major, after 20 years' service, if promoted before Jan. 9, 1907.....	547	10 0	18	5 0	73	0 0	22	5 10	41	1 3	£ 702 2 1	3,403.80
Captain.....	282	17 6	18	5 0	54	15 0	16	4 3	372	1 9	£ 372 1 9	1,803.88
Captain, after 7 years' full-pay service.....	310	5 0	18	5 0	54	15 0	16	4 3	399	9 3	£ 399 9 3	1,936.69
Captain, after 10 years' full-pay service.....	383	5 0	18	5 0	54	15 0	16	4 3	472	9 3	£ 472 9 3	2,290.50
Lieutenant on probation and lieutenant.....	255	10 0	18	5 0	41	1 3	11	2 11½	325	19 2½	£ 325 19 2½	1,725.70
Quartermaster (minimum) ²	164	5 0	18	5 0	41	1 3	11	2 11½	234	14 2½	£ 234 14 2½	1,137.88
Quartermaster (maximum) ²	273	15 0	18	5 0	73	0 0	22	5 10	387	5 10	£ 387 5 10	1,877.59

¹ Officers in charge of hospitals, and in certain other positions of command, receive, in addition, charge pay varying from 60 cents to \$2.42 a day.

² Quartermasters receive quinquennial increases of pay of 36 cents a day up to a maximum of \$3.64 a day.

TABLE No. 5a (j).

Pay department.	Pay.		Servant allowance.		Lodging allowance.		Fuel and light allowance.		Forage and stabling allowance.		Total pay and allowance.	Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.		
Chief paymaster.....	638	15 0	18	5 0	100	7 6	27	17 4	41	1 3	£ 826 6 1	\$4,006.92
Staff paymaster.....	410	12 6	18	5 0	73	0 0	22	5 10	524	3 4	£ 524 3 4	2,536.21
Staff paymaster after 5 years.....	456	5 0	18	5 0	82	2 6	22	5 10	578	18 4	£ 578 18 4	2,806.59
Paymaster (minimum) ¹	182	10 0	18	5 0	41	1 3	11	2 11½	252	19 2½	£ 252 19 2½	1,226.35
Paymaster (maximum) ¹	365	0 0	18	5 0	73	0 0	22	5 10	478	10 10	£ 478 10 10	2,319.97
Assistant paymaster (minimum) ²	164	5 0	18	5 0	41	1 3	11	2 11½	234	14 2½	£ 234 14 2½	1,137.88
Assistant paymaster (maximum) ²	273	15 0	18	5 0	73	0 0	22	5 10	387	5 10	£ 387 5 10	1,877.59

¹ Paymasters receive an increment of 60 cents a day 5 years as such, and thereafter triennial increments of 36 cents a day up to a maximum of \$4.85 a day.

² Assistant paymasters receive quinquennial increments of pay of 36 cents a day up to a maximum of \$3.64 a day.

NOTE.—In addition charge pay varying from 60 cents to \$1.21 per day is issued to certain staff paymasters. Officers other than chief paymasters performing treasury chest duties abroad receive extra pay at 84 cents or \$1.21 a day.

TABLE No. 5a (k).

Ordnance department.	Pay.		Servant allow- ance.		Lodging allow- ance.		Fuel and light allowance.		Forage and sta- bling allowance.		Total pay and allowance.		Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	£	s. d.	
Principal ordnance officer.....	1,200	0 0			200	15 0					1,400	15 0	\$6,790.84
Ordnance officer, first class ¹	638	15 0	18 5 0		100	7 6		27 17 4	41 1 3		826	6 1	4,005.92
Ordnance officer, second class.....	547	10 0	18 5 0		82	2 6		22 5 10	41 1 3		711	4 7	3,447.94
Ordnance officer, third class.....	474	10 0	18 5 0		73	0 0		22 5 10	41 1 3		629	2 1	3,049.90
Ordnance officer, fourth class.....	410	12 6	18 5 0		54	15 0		16 4 3	(²)		499	16 9	2,423.21
Commissary of ordnance:													
After 10 years' commissioned service.....	292	0 0	18 5 0		73	0 0		22 5 10			405	10 10	1,966.07
After 15 years' commissioned service.....	319	7 6	18 5 0		73	0 0		22 5 10			432	18 4	2,095.78
After 20 years' commissioned service.....	346	15 0	18 5 0		73	0 0		22 5 10			460	5 10	2,231.49
Deputy commissary:													
After 5 years' commissioned service.....	246	7 6	18 5 0		54	15 0		16 4 3			335	11 9	1,626.93
After 10 years' commissioned service.....	273	15 0	18 5 0		54	15 0		16 4 3			362	19 3	1,759.64
After 15 years' commissioned service.....	301	2 6	18 5 0		54	15 0		16 4 3			390	6 9	1,892.36
Assistant commissary.....	200	15 0	18 5 0		41	1 3		11 2 11½			271	4 2½	1,314.83
After 5 years.....	228	2 6	18 5 0		41	1 3		11 2 11½			298	11 8½	1,447.54
Chief inspector of ordnance machinery.....	474	10 0	18 5 0		82	2 6		22 5 10			597	3 4	2,861.86
Inspector, ordnance machinery, first class.....	419	15 0	18 5 0		73	0 0		22 5 10			533	5 10	2,585.40
Inspector, ordnance machinery, second class.....	328	10 0	18 5 0		54	15 0		16 4 3			417	14 3	2,025.07
After 5 years as such.....	374	2 6	18 5 0		54	15 0		16 4 3			463	6 9	2,266.26
Inspector, ordnance machinery, third class.....	237	5 0	18 5 0		41	1 3		11 2 11½			307	14 2½	1,491.78
After 5 years as such.....	282	17 6	18 5 0		41	1 3		11 2 11½			353	6 8½	1,712.97

¹ The ordnance officers at Woolwich Arsenal receive salaries varying from \$3,636 to \$2,181.60, with quarters or lodging allowance. The chief, inspectors, and assistant inspector are paid on the same rates as ordnance officers of corresponding class at Woolwich.

* Forage allowance granted to fourth-class ordnance officer only if acting as chief ordnance officer of a district or command, or as adjutant of the Army Ordnance Corps.

TABLE No. 5a (l).—Pay and allowances of officer of the British Army serving at home, 1913-14.

Military wing, Royal Flying Corps.	Regimental pay.	Flying pay. ¹		Mess allowance.	Lodging allowance.		Fuel and light allowance.		Total pay and allowances.		Total in United States currency.
		£	s. d.		£	s. d.	£	s. d.	£	s. d.	
Commanding officer.....	800 0 0	146 0 0	0 0	6	73 0 0	0 0	12 3 3	0 0	873 0 0	0 0	\$4,232.30
Squadron commander.....	456 5 0	146 0 0	0 0	6	54 15 0	0 0	7 10 1	3 3	675 3 3	1 1	3,273.19
Flight commander.....	310 5 0	146 0 0	0 0	6	24 1 3	0 0	7 10 1	3 3	510 8 1	1 1	2,474.45
Flying officer.....	219 0 0	146 0 0	0 0	6	36 10 0	0 0	7 10 1	3 3	414 11 10	1 1	2,009.95
Adjutant.....	310 5 0	146 0 0	0 0	6	41 1 3	0 0	7 10 1	3 3	510 8 1	1 1	2,474.45
Quartermaster (minimum) ³	209 17 6	146 0 0	0 0	6	41 1 3	0 0	11 2 11	8 1	258 1 8	1 1	1,299.69
Quartermaster (maximum) ³	319 7 6	146 0 0	0 0	6	54 15 0	0 0	12 3 3	0 0	392 5 9	0 0	1,901.81

¹ Flying pay is issued continuously only to officers who are qualified aeroplane fliers.² The lodging allowance herein is for a lieutenant. In the case of a captain, this allowance is increased by \$22.12.³ The quartermaster's pay is that of the Royal Engineers, plus extra pay at 48 cents per day, and rises by quinquennial increments of 36 cents a day to a maximum of \$4.04 a day after 20 years' service.

Chaplains.	Pay.		Servant allowance.		Lodging allowance.		Fuel and light allowance.		Forage and stabling allowance.	Total pay and allowance.		Total in United States currency.
	£	s. d.	£	s. d.	£	s. d.	£	s. d.		£	s. d.	
Chaplains, first class.....	365	0 0	18	5 0	100	7 6	27	17 4	.....	511	9 10	\$2,479.71
Chaplains, after 5 years as such.....	410	12 6	18	5 0	100	7 6	27	17 4	.....	557	2 4	2,700.90
Chaplains, second class.....	319	7 6	18	5 0	82	2 6	22	5 10	.....	442	0 10	2,143.02
Chaplains, third class.....	273	15 0	18	5 0	73	0 0	22	5 10	.....	387	5 10	1,877.59
Chaplains, fourth class.....	182	10 0	18	5 0	54	15 0	16	4 3	.....	271	14 3	1,317.26
Chaplains, fourth class, after 5 years as such.....	228	2 6	18	5 0	54	15 0	16	4 3	.....	317	6 9	1,538.45
Chaplains on probation.....	182	10 0	.....	.....	.....	.....	.....	.....	.....	182	10 0	1,878.76

NOTE.—A few chaplains draw forage allowances upon proof of the duties requiring it.

TABLE No. 5a (n).

[P. 102 (vote 13), Army estimates, Great Britain, 1913-14.]

	Pay.	Pay in United States currency.
Field marshal.....	£2,600 to 4,000	\$12,604.80 to 19,392.00
General.....	1,600	7,756.80
Lieutenant general.....	1,300	6,302.40
Major general.....	1,000	4,848.00

TABLE No. 5b.—Pay and allowances of commissioned officers, United States Army.

[Authority: Army Regulations, Army Register, General Orders War Department, and Military Laws of United States.]

	Pay. ¹	Commu- tation for quarters.	Commu- tation for light.	Commu- tation for heat. ²	Total.
Lieutenant general.....	\$11,000	\$1,440	\$50.40	\$252.00	\$12,742.40
Major general.....	8,000	1,296	45.00	225.00	9,566.00
Brigadier general.....	6,000	1,152	42.12	210.60	7,404.72
Colonel.....	4,000	1,008	37.44	187.20	5,232.64
After 5 years.....	4,400	1,008	37.44	187.20	5,632.64
After 10 years.....	4,800	1,008	37.44	187.20	6,032.64
After 15 years.....	5,000	1,008	37.44	187.20	6,232.64
After 20 years.....	5,000	1,008	37.44	187.20	6,232.64
Lieutenant colonel.....	3,500	864	30.96	154.80	4,549.76
After 5 years.....	3,850	864	30.96	154.80	4,899.76
After 10 years.....	4,200	864	30.96	154.80	5,249.76
After 15 years.....	4,500	864	20.96	154.80	5,549.76
After 20 years.....	4,500	864	20.96	154.80	5,549.76
Major.....	3,000	720	27.00	135.00	3,882.00
After 5 years.....	3,300	720	27.00	135.00	4,182.00
After 10 years.....	3,600	720	27.00	135.00	4,482.00
After 15 years.....	3,900	720	27.00	135.00	4,782.00
After 20 years.....	4,000	720	27.00	135.00	4,882.00
Captain.....	2,400	576	22.32	111.60	3,009.92
After 5 years.....	2,640	576	22.32	111.60	3,249.92
After 10 years.....	2,880	576	22.32	111.60	3,489.92
After 15 years.....	3,120	576	22.32	111.60	3,729.92
After 20 years.....	3,360	576	22.32	111.60	3,969.92
First lieutenant.....	2,000	432	19.80	99.00	2,550.80
After 5 years.....	2,200	432	19.80	99.00	2,750.80
After 10 years.....	2,400	432	19.80	99.00	2,950.80
After 15 years.....	2,600	432	19.80	99.00	3,150.80
After 20 years.....	2,800	432	19.80	99.00	3,350.80
Second lieutenant.....	1,700	288	14.04	70.20	2,072.24
After 5 years.....	1,870	288	14.04	70.20	2,242.24
After 10 years.....	2,040	288	14.04	70.20	2,412.24
After 15 years.....	2,210	288	14.04	70.20	2,582.24
After 20 years.....	2,380	288	14.04	70.20	2,752.24
First lieutenant, Medical Reserve Corps.....	2,000	432	19.80	99.00	2,550.80
After 5 years.....	2,200	432	19.80	99.00	2,750.80
After 10 years.....	2,400	432	19.80	99.00	2,950.80
After 15 years.....	2,600	432	19.80	99.00	3,150.80
After 20 years.....	2,800	432	19.80	99.00	3,350.80
Dental surgeon.....	2,000	432	19.80	99.00	2,550.80
After 5 years.....	2,200	432	19.80	99.00	2,750.80
After 10 years.....	2,400	432	19.80	99.00	2,950.80
After 15 years.....	2,600	432	19.80	99.00	3,150.80
After 20 years.....	2,800	432	19.80	99.00	3,350.80
While on examining board, additional.....	720				720.00
Acting dental surgeon.....	1,800	432	(³)	99.00	2,331.00
Veterinarians.....	1,700	288	14.04	70.20	2,072.24
After 5 years.....	1,870	288	14.04	70.20	2,242.24
After 10 years.....	2,040	288	14.04	70.20	2,412.24
After 15 years.....	2,210	288	14.04	70.20	2,582.24
After 20 years.....	2,380	288	14.04	70.20	2,752.24

¹ Entitled to 10 per cent additional for foreign service, except in Hawaiian Islands, Porto Rico, Alaska, and Canal Zone.² Not practicable to ascertain accurately; assumed as 5 times light allowance.³ No authority found for payment of light allowance to acting dental surgeons.

TABLE No. 6.—Average rates of minimum pay of comparable grades of enlisted men of the armies of the United States and Great Britain.

United States Army.	British Army.
Regimental sergeant (battalion sergeant major, engineers)..... \$540.00	Regimental sergeant major (warrant officer) \$500.88
Quartermaster sergeant, Quartermaster Corps..... 540.00	Quartermaster sergeant..... 375.94
Stable sergeant, Field Artillery..... 360.00	Farrier quartermaster sergeant (warrant officer, cavalry)..... 374.50
First sergeant..... 540.00	Squadron, battery, and company sergeants major and infantry color sergeant..... 358.23
Chief trumpeter..... 480.00	Sergeant trumpeter..... 293.57
Sergeant..... 390.86	Sergeants..... 257.41
Trumpeter or musician..... 180.00	Trumpeter or bugler..... 114.97
Corporal..... 253.14	Corporal..... 199.42
Saddler..... 252.00	Saddler..... 175.10
Private..... 180.00	Private..... 102.72

TABLE No. 6a.—Minimum pay of British warrant officers and enlisted men serving at home.

[Army Estimates, 1913-14; pp. 128-147.]

	Cavalry of the line.	Horse artillery.	Field artillery.	Garri-son artil- lery.	Engi- neers.	Infan- try of the line.	Army service corps.	
Regimental sergeant major (warrant officer).....	\$471.95	\$528.25	\$514.65	\$514.65	\$528.25	\$461.65	\$486.62	\$500.88
Quartermaster sergeant.....	383.25	383.25	368.65	368.65	397.85	353.90	376.02	375.94
Farrier, quartermaster sergeant ¹	354.05	390.55	354.05		397.85		376.02	374.50
Squadron, battery, and company sergeants major and infantry color sergeant.....	383.25	383.25	368.65	354.05	332.15	310.25	376.02	358.23
Sergeant trumpeter.....	237.25	295.65	281.05	281.05	397.85			293.57
Sergeants.....	237.25	295.65	281.05	281.05	288.45	208.05	210.38	257.41
Trumpeter or bugler.....	118.62	175.20	105.85	105.85	102.20	94.90	102.20	114.97
Corporal.....	173.20	237.25	222.65	222.65	219.00	146.00	175.20	199.42
Saddler.....	156.95	193.45	175.20	175.20			175.20	175.10
Private.....	102.20	113.15	105.85	105.85	102.20	87.60	102.20	102.72

¹ Warrant officer of cavalry.

TABLE No. 6b.—Minimum pay of enlisted men, United States Army.

[Authority: Army Regulations, Army Register, and Military Laws of United States.]

	Cav- alry.	Field Artil- lery.	Coast Artil- lery Corps.	In- fantry.	Engi- neers.	Quar- termas- ter Corps.	Signal Corps.	
Regimental sergeant major (and bat- talion sergeant major, engineers)...	540	540	540	540	540			\$540.00
Quartermaster sergeant, Quartermas- ter Corps.....						540		540.00
Stable sergeant, Field Artillery.....		360						360.00
First sergeant.....	540	540	540	540	540		540	540.00
Chief trumpeter.....	480	480						480.00
Sergeant.....	360	360	360	360	432	432	432	390.36
Corporal.....	252	252	252	252	288	288	288	253.14
Trumpeter or musician.....	180	180	180	180	180	180		180.00
Private.....	180	180	180	180	180	180	180	180.00
Saddler or farrier.....	252							252.00

NOTE.—Pay is increased 20 per cent for foreign service except in Hawaiian Islands, Porto Rico, Alaska, and Canal Zone. Additional pay granted for excellence in marksmanship and gunnery.

TABLE NO. 7.—*Items of expenses relating solely to coast defense, United States.*

	Appropriation.	Maintenance.	Permanent works, etc.	Savings.
OFFICE, CHIEF COAST ARTILLERY.				
Construction of fire-control stations, insular possessions.....	\$55,000.00		\$55,000.00	
OFFICE, CHIEF SIGNAL OFFICER.				
Fire control at fortifications.....	122,790.32		91,755.99	\$31,034.33
Fire control at fortifications, Panama Canal.....	43,454.04		43,454.04	
Do.....	10,800.00		10,800.00	
Panama fortifications.....	23,270.40		21,928.22	1,342.18
Maintenance, torpedo control, seacoast defenses.....	160,283.47	\$154,956.24		5,327.23
Fire-control installation, insular possessions.....	42,682.75		16,932.62	25,750.13
Maintenance of fire control, insular possessions.....	11,288.74	10,044.61		1,244.13
Signal equipment, Coast Artillery posts.....	12,000.00	12,000.00		
ENGINEER DEPARTMENT.				
Construction of gun and mortar battery.....	250,000.00		250,000.00	
Modernizing emplacements.....	100,000.00		100,000.00	
Electric, steam, and power plants, seacoast defense.....	50,000.00		50,000.00	
Searchlights, harbor defense.....	100,000.00		100,000.00	
Protection of fortifications.....	165,000.00	165,000.00		
Plans for fortifications.....	5,000.00	5,000.00		
Maintenance for searchlights, etc.....	40,000.00	40,000.00		
Sea walls and embankments.....	25,000.00	9,878.41	15,121.59	
Preservation, torpedo defenses.....	20,000.00	20,000.00		
Seacoast batteries, Philippine Islands.....	300,000.00		300,000.00	
Protection fortifications, Hawaiian Islands.....	1,000.00	1,000.00		
Protection torpedo defenses, Hawaiian and Philippine Islands.....	3,000.00	3,000.00		
	1,540,569.72	420,879.26	1,054,992.46	64,698.00
ORDNANCE DEPARTMENT.				
Fire control at fortifications.....	221,413.71		189,610.26	31,803.45
Fire control at fortifications, insular possessions.....	49,989.70		38,554.21	11,435.49
Fortifications, insular possessions.....	1,118,069.46	80,682.68	931,649.48	105,737.30
Armament of fortifications.....	6,723,083.70	1,736,263.79	3,250,076.05	1,736,741.86
Panama fortifications.....	463,143.89	25,595.90	338,038.61	99,509.38
Armament of fortifications, Panama Canal.....	763,000.00	15,282.69	709,080.93	38,636.38
Submarine mines, Panama Canal.....	48,871.70	2,938.39	34,177.66	11,755.65
Submarine mines.....	460,772.73	82,144.03	150,749.47	227,879.23
Submarine mines, insular possessions.....	57,882.29	11,185.65	40,153.76	6,542.88
	11,446,796.90	2,374,974.39	6,737,082.89	2,334,739.62

It will be noted that this table does not include any expenditures for barracks and quarters or other expenses connected with the maintenance of Coast Artillery posts and fortifications, as such data can not be accurately computed.

TABLE NO. 8.—*Percentage of enlisted strength of infantry, cavalry, and artillery to total enlisted strength of Military Establishment.*

	Great Britain.	United States.
	<i>Per cent.</i>	<i>Per cent.</i>
Infantry.....	50.51	41.06
Coast artillery.....	8.20	18.95
Cavalry.....	7.36	14.47
Field artillery.....	8.92	5.59

TABLE NO. 9.—*Number of enlisted men per officer in the various arms of the service.*

Arm.	Great Britain (Army estimates of effective and non-effective services for 1913-14).	United States (Tables of Organization, 1914).
Infantry.....	29.84	24.55
Coast artillery.....	23.10	27.00
Cavalry.....	27.40	20.28
Field artillery.....	25.58	23.08
Engineers, signal corps and flying corps ¹	15.90	30.21
Ordnance.....	9.50	8.70

Number of enlisted men per officer, considering total officers, are enlisted men, actually in service on

July 1, 1915:	
Great Britain.....	17.5
United States.....	21.07

¹ In Great Britain the duties performed by our signal corps (exclusive of aviation) are performed by the engineers. In the United States the duties performed by the British Flying Corps are performed by our Signal Corps. For purposes of comparison, therefore, it was necessary to construe these various corps.

TABLE NO. 10.—*Officers and enlisted men of the British Army (depots and depot organizations not included) serving at home and abroad except in India.*

[Army estimation of effective and noneffective services for 1913-14.]

	Officers.	Enlisted men.
Cavalry (includes household cavalry).....	461	12,637
Horse and field artillery.....	598	15,303
Garrison artillery.....	609	14,082
Engineers (includes signal organizations).....	468	8,334
Flying corps.....	112	893
Infantry (includes guards).....	2,904	86,666
Army service corps.....	458	6,005
Ordnance department.....	232	2,207
Medical corps.....	751	3,820
Veterinary corps.....	98	248
Pay corps.....	.....	565
Chaplains.....	113	.....
Totals in British service, including general staff officers, depot organizations, etc.	9,800	171,563

TABLE No. 11.—*Great Britain.*

[Authority—Appropriation account, 1912-13, with report of the comptroller and auditor general.]

Total expenditures, military establishment-----	\$114,264,512.57
Pay, mileage, etc-----	39,967,066.82
Subsistence-----	8,260,721.66
Transportation-----	4,733,304.84
Clothing-----	5,848,651.48

Percentages to total expenditures :

Pay, mileage, etc-----	34.10
Subsistence-----	7.22
Transportation-----	4.14
Clothing-----	5.11

Total-----	\$666.01
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Per capita cost, enlisted men only :

Total-----	666.01
Pay, mileage, etc-----	232.95
Subsistence-----	48.14
Transportation-----	27.58
Clothing-----	34.91

Per capita cost, officers and enlisted men :

Total-----	630.03
Pay, mileage, etc-----	214.30
Subsistence-----	45.54
Transportation-----	26.09
Clothing-----	32.24

Total officers, 9,800 (World's Almanac).

Total enlisted men, 171,563 (appropriation account, 1912-13, with the report of the comptroller and auditor general).

TABLE No. 12.—*United States.*

Total usual expenditures for Military Establishment (table)-----	\$113,248,541.52
Pay, mileage, etc. (memorandum Quartermaster General)-----	49,722,369.91
Subsistence (memorandum Quartermaster General)-----	9,802,141.39
Transportation (memorandum Quartermaster General)-----	10,680,546.69
Clothing (memorandum Quartermaster General)-----	4,623,272.94

Percentage to total :

Pay, mileage, etc-----	43.90
Subsistence-----	8.65
Transportation-----	9.43
Clothing, etc-----	4.08

Per capita cost, enlisted men only :

Total-----	\$1,119.11
Pay, mileage, etc-----	491.35
Subsistence-----	96.86
Transportation-----	105.54
Clothing-----	45.68

Per capita cost, officers and enlisted men :

Total-----	1,068.46
Pay, mileage, etc-----	469.11
Subsistence-----	92.48
Transportation-----	100.76
Clothing-----	43.61

Total officers, 4,797 (memorandum The Adjutant General).

Total enlisted men, 101,195 (memorandum The Adjutant General).

TABLE NO. 13.—*Ration components.*

Great Britain (par. 35, royal warrants for the allowances of the army, 1914).		United States (par. 1205, Army Regulations, 1913).	
Field rations (issued whenever practicable in garrison and field):		Garrison rations (issued whenever practicable in garrison and field):	
	Ounces.		Ounces.
Fresh meat.....	20	Fresh meat.....	20
Or preserved meat.....	16	Or canned meat.....	16
		Or bacon.....	12
		Or dried fish.....	14
		Or pickled fish.....	18
		Or canned fish.....	16
		Or turkey (Thanksgiving and Christmas).....	16
Bacon.....	4	Lard or lard substitute.....	.64
Or butter, lard, or margarine.....	4	Butter or oleomargarine.....	.5
Or sweet oil.....	1.5	Soft bread.....	18
Bread.....	20	Or hard bread.....	16
Or biscuit.....	16	Or flour.....	18
Or oatmeal (for each 4 ounces of bread or biscuit), 4.		Or corn meal.....	20
Or rice (for each 4 ounces of bread or biscuit), 4.		Baking powder.....	.08
Cheese.....	3	Potatoes.....	20
Peas, beans, or dried potatoes.....	2	Or canned potatoes.....	15
Or fresh vegetables.....	8	Or onions, in lieu of equal quantity of potatoes, but not exceeding 20 per cent of total issue.	
		Or tomatoes, canned, in lieu of equal quantity of potatoes, but not exceeding 20 per cent of total issue.	
		Or other fresh vegetables (not canned) in lieu of equal quantity of potatoes, but not exceeding 30 per cent of total issue.	
Tea.....	.625	Beans.....	2.4
Or chocolate (for each $\frac{1}{4}$ ounce of tea).....	.5	Or rice or hominy.....	1.6
Jam.....	4	Coffee, roasted and ground.....	1.12
Or dried fruit.....	4	Or coffee, green.....	1.4
		Or tea, black or green.....	.32
Sugar.....	3	Prunes.....	1.28
Salt.....	.5	Or apples, dried or evaporated.....	1.28
Pepper.....	.027	Or peaches, dried or evaporated.....	1.28
Mustard.....	.05	Or jam, in lieu of equal quantity of prunes, but not exceeding 50 per cent of total issue.	
Lime juice.....	1.1	Sugar.....	3.2
		Milk, evaporated, unsweetened.....	.5
Rum (at discretion of commanding officer when recommended by surgeon).	1.5	Salt.....	.64
Or porter.....	.1	Pepper, black.....	.04
Tobacco (for those who smoke), per week.	2	Cinnamon, nutmeg, cloves, or ginger...	.014
		Vinegar.....	1.16
		Or pickles, cucumbers, in lieu of equal quantity of vinegar, but not exceeding 50 per cent of total issue.	
		Sirup.....	1.32
		Flavoring extract, lemon or vanilla.....	.014

TABLE No. 14.—*Approximate annual cost (Quartermaster Department only) for maintaining a soldier in Insular Possessions, China, Alaska, and Canal Zone, as compared with cost in the United States.*

[Compiled from data O. Q. M. G. furnished War College Division, Oct. 29, 1915, and from data with reference to commissioned and enlisted strength on July 1, 1915, obtained informally from the O. T. A. G. Cost of maintenance of draft animals is not included, as data were not available.]

	Cost in United States (65,183 enlisted men, 3,541 officers).	Alaska (747 enlisted men, 23 officers).		China (1,361 enlisted men, 45 officers).		Philippine Islands (17,884 enlisted men, 637 officers).		Hawaii (9,199 enlisted men, 322 officers).		Porto Rico (670 enlisted men, 37 officers).		Panama Canal Zone, (6,151 enlisted men, 192 officers).	
		Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.	Increase.	Decrease.
Foreign service pay, enlisted men.....		\$41. 6448		\$41. 6448		\$41. 6448							
Foreign service pay, pro rata amount paid officers.....		6. 8502		7. 3564		8. 1286							
Extra duty pay, enlisted men on Alaskan cable and telegraph systems.....		42. 9718											
Fuel.....	\$29. 8343	94. 0356											
Light.....	14. 9425												
Replacement of mount.....	17. 5000			7. 5000		7. 5000				\$7. 5000		\$7. 5000	
Quartermaster depot, Manila.....						36. 7668							
Bureau of Insular Affairs.....	1. 1320					. 8287							
Yearly gains and losses, subsistence stores.	30. 9106	3. 0404		. 0480		2. 0919							
Maintenance, barracks and quarters.....		\$9. 4919		16. 5513		22. 9100							
Sea transportation, passengers.....		57. 5000		37. 6300		22. 9100							
Sea transportation, animals.....		9. 0000		19. 5400		17. 3700		\$17. 3000		50. 0000		30. 0000	
Sea transportation, freight (2,730 pounds per man).....		20. 4750		14. 7420		14. 7420		4. 7750		10. 7100		12. 1400	
Rail transportation, passengers.....		4. 5300		22. 5400		22. 5400		22. 5400		4. 0950		12. 2850	
Rail transportation, animals.....		1300		1800		1800		1300		6. 2100		6. 2100	
Rail transportation, freight (2,730 pounds per man).....		10. 1556		16. 6803		16. 6803				. 5600		. 5600	
Total per mounted enlisted man.....		290. 3334	9. 4919	184. 4158		191. 8831		16. 6803		2. 9757		2. 9757	
Net total per mounted enlisted man.....		9. 4919		184. 4158		31. 1667		65. 5353		82. 0507		71. 6707	
Net total per dismounted enlisted man.....		280. 8415		184. 4158		31. 1667		51. 7492		39. 7851		48. 5822	
		9. 1300		27. 2200		160. 2164		13. 7561		42. 2656		23. 0885	
		271. 7115		157. 1958		25. 0500		4. 2400		18. 7700		20. 2000	
						135. 1664		9. 5461		23. 4956		2. 8885	

1 Loss.

Alaska.....	747 dismounted enlisted men, at \$271.7115.....	\$202,968.4905
China.....	1,361 dismounted enlisted men, at \$157.1958.....	223,943.4838
Philippine Islands.....	15,102 dismounted enlisted men, at \$135.1664.....	2,041,382.9728
	2,782 mounted enlisted men, at \$100.2164.....	447,722.0218
Hawaii.....	7,212 dismounted enlisted men, at \$9.5461.....	68,846.4732
	1,987 mounted enlisted men, at \$13.7861.....	27,392.9807
Porto Rico.....	670 dismounted enlisted men, at \$23.4956.....	15,742.0520
Canal Zone.....	6,061 dismounted enlisted men, at \$2.8885.....	17,507.1985
	90 mounted enlisted men, at \$23.0885.....	2,077.9650
		<hr/>
		3,047,583.6413
		84.6208
<hr/>		
Average additional cost per enlisted man for foreign service.....		36.012

COST OF LIVING AND RATES OF WAGES.

[Relating to Tables A to F, inclusive.]

In order to make a comparison of the cost of living and rates of wages in Great Britain and the United States we are, of course, restricted to the classes in which investigations have been made in both countries for the same period. It is also necessary to select a period before the influence of the present war in Europe made itself felt.

We find that an investigation was made in both countries in 1912 on the cost of food for the average laboring class family; also, on the rates of wages for certain trades and occupations. One of the principal items making up the cost of living had to be ignored because the figures for Great Britain were not available. Then there was that of clothing. This item, therefore, in so far as actual figures are concerned, had to be ignored. The investigation in Great Britain showed that the cost of making men's clothing had increased slightly since 1901, but not in proportion to the increase in cost of the raw product. The quality of the clothing purchased by the workingman had materially fallen. The figures, however, were not given in the report.

The results of the investigations for those articles entering into the cost of living and certain trades and occupations, which are comparable for the two countries, are given in the following tables:

COMPARATIVE COST OF LIVING—GREAT BRITAIN AND UNITED STATES—
FOOD, FUEL, AND RENT.

[Tables A, B, C.]

Yearly expenditure per average workingman's family.

Food (Tables A1 and A2) :

Great Britain-----	\$283. 29
United States-----	471. 37
	166

Fuel (Tables B1 and B2) :

Great Britain-----	28. 08
United States-----	34. 18
	121

Rent (Tables C1 and C2) :

Great Britain-----	70. 98
United States-----	135. 95
	191

FOOD.

GREAT BRITAIN.

[Table A1.]

The following is taken from a British Government publication entitled "Report of an Enquiry by the Board of Trade into Working-Class Rents and Retail Prices, Together with the Rates of Wages

in Certain Occupations in Industrial Towns in the United Kingdom in 1912."

In figuring the expenditures of food and coal for the working-man's family, the report says:

The list comprised bread, flour, potatoes, meat, bacon, eggs, milk, butter, cheese, tea, sugar, and coal, and the representative character of the articles of food included may be gathered from the estimate that an average of about 75 per cent of working-class expenditures on food is in respect of those items.

Average consumption and cost per week for a family consisting of two adults and three or four children in 1912.

Articles.	Amount.	Cost.	Articles.	Amount.	Cost.
Meat.....pounds..	6.5	\$1.001	Potatoes.....pounds..	17	\$0.194
Tea.....do.....	.6	.20	Flour.....do.....	10	.30
Sugar.....do.....	5.33	.225	Bread.....do.....	22	.633
Bacon.....do.....	1.5	.315	Milk.....pints..	10	.374
Eggs.....do.....	12	.137			
Cheese.....do.....	.75	.127	Total.....		4.086
Butter.....do.....	2	.58			

As this is 75 per cent of food cost, the entire food cost per week would be \$5.448.

Average cost of food per year, \$283.30.

UNITED STATES.

[Table No. A2.]

The following information was obtained from a United States Government publication entitled "Bulletin of the United States Bureau of Labor Statistics (whole number 140)."

The following table has been calculated from tables appearing in the above publication:

Average annual cost per workingman's family of the principal articles of food consumed in 1912 in 2,567 families in the United States.

[Average size of family, 5.31.]

Articles.	Cost.	Articles.	Cost.
Fresh beef.....	\$72.17	Coffee.....	\$15.49
Salt beef.....	7.59	Sugar.....	22.74
Fresh hog products.....	20.22	Molasses.....	2.45
Salt hog products.....	20.12	Flour and meal.....	24.18
Other meat.....	14.10	Bread.....	17.96
Poultry.....	13.69	Rice.....	2.97
Fish.....	11.69	Potatoes.....	13.65
Eggs.....	24.23	Other vegetables.....	27.19
Milk.....	30.27	Fruit.....	23.83
Butter.....	41.48	Vinegar, pickles, and condiments.....	5.96
Cheese.....	3.79	Other food.....	29.44
Lard.....	13.50		
Tea.....	7.66		471.37

FUEL.

GREAT BRITAIN.

[Table No. B1.]

The following information was obtained from a British Government publication entitled "Report of an Enquiry by the Board of Trade into Working-class Rents and Retail Prices, Together with the Rates of Wages in Certain Occupations in Industrial Towns in the United Kingdom in 1912."

The average consumption and cost per week for a family consisting of two adults and three or four children for the year 1912: Coal—amount per week, 2 hundredweight; cost per week, \$0.54. Average cost per year, \$28.

UNITED STATES.

[Table No. B2.]

The following information was obtained from two United States Government publications, "Bulletin of the United States Bureau of Labor Statistics (whole number 138)" and "Bulletin of the United States Bureau of Labor Statistics (whole number 140)."

Bulletin No. 138 gives the prices for coal, for family use, in ton and half-ton lots, for the year 1912. Bulletin No. 140 gives the relative prices of coal, in ton lots, for household use, from 1907 to 1913, from which we find that the average annual increase in price is 0.061 per cent, assuming that the increase has been fairly constant since 1901. We will, therefore, have an increase for the year 1912 of 6.71 per cent over 1901. The average annual amount expended for fuel by the average workingman's family in 1901, as given by Bulletin No. 140, is \$32.23, which would make the expenditure in 1912 \$34.86.

RENT.

GREAT BRITAIN.

[Table C1.]

The following information was obtained from a British Government publication entitled "Report of an Inquiry by the Board of Trade into Working-Class Rents and Retail Prices, Together with the Rates of Wages in Certain Occupations in Industrial Towns in the United Kingdom in 1912."

Predominant weekly rents of working-class dwellings in London (middle zone) in 1912:

Number of rooms :	Price per week.
Two	\$1. 32
Three	1. 74
Four	2. 10
Five	2. 52
Six	3. 00

Predominant weekly rents of working-class dwellings in cities other than London in 1912:

Number of rooms :	Price per week.
Two-----	\$0. 75
Three-----	1. 05
Four-----	1. 23
Five-----	1. 44
Six-----	1. 77

In round numbers the total population of the United Kingdom is 45,000,000. The population of London is 7,000,000. The average rent, therefore, for Great Britain, including London, would be approximately as follows:

Number of rooms :	Price per week.
Two-----	\$0. 839
Three-----	1. 157
Four-----	1. 365
Five-----	1. 608
Six-----	1. 961

The figures all include the "local rates" (tax rates) and charges for rates.

It is assumed that four is about the average number of rooms the workingman's family of two adults and three or four children in the United States will occupy and that number has been selected for comparison.

Average rent per week-----	\$1. 365
Average rent per year-----	70. 98

UNITED STATES.

[Table C2.]

The following information was obtained from a United States Government publication entitled "United States Department of Labor, Bureau of Labor Statistics, Monthly Review of the United States Bureau of Labor Statistics, Vol. 1, October, 1915, No. 4." In this report we find that the Bureau of Standards of New York City "reached the conclusion that it is impossible for an unskilled laborer's family of five, consisting of husband, wife, and three children under 14 years of age, to live in New York City on less than \$840 a year and maintain a standard of living consistent with American ideals. * * * This is apportioned as follows: Housing, \$168 * * *."

The following is from a publication by Mr. Scott Nearing, Ph. D., entitled "Financing the Wage-earner's Family." In this publication we find reports of investigations in 1912 on the actual cost of living in four localities: Manhattan Island; Fall River, Mass.;

Georgia and North Carolina; and Homestead, Pa. The items for rent in these localities were as follows:

Manhattan Island.....	\$168.00
Fall River, Mass.....	131.00
Georgia and North Carolina.....	44.81
Homestead, Pa.....	200.00
Average, \$135.95.	

COMPARATIVE WAGES—GREAT BRITAIN AND UNITED STATES—BUILDING, ENGINEERING, AND PRINTING TRADES.

[Tables D, E, F, G.]

	Great Britain.	United States.	
BUILDING TRADES.			
[Tables D1 and D2.]			
* WAGES PER HOUR.			
Bricklayers.....	\$0.18	\$0.6549	363
Masons.....	.175	.5861	335
Carpenters.....	.175	.4974	284
Plumbers.....	.175	.5782	330
Plasterers.....	.175	.6416	366
Painters.....	.160	.4397	274
Bricklayer's laborers.....	.115	.3577	311
Plasterer's laborers.....	.120	.4096	341
ENGINEERING TRADES.			
[Tables D1 and D2.]			
WAGES PER WEEK.			
Fitters.....	8.64	25.72	297
Pattern makers.....	9.30	22.83	245
Iron molders.....	9.36	19.88	212
Laborers.....	4.98	12.12	243
PRINTING TRADES.			
[Tables D1 and D2.]			
WAGES PER WEEK.			
Compositors.....	7.80	23.15	296
LETTER CARRIERS.			
[Tables E1 and E2.]			
AVERAGE YEARLY PAY.			
Letter carriers.....	318.17	1,017.54	319
SCHOOL TEACHERS.			
[Tables F1 and F2.]			
AVERAGE YEARLY PAY.			
School teachers.....	661.55	837.66	126
POLICEMEN.			
[Tables G1 and G2.]			
AVERAGE YEARLY SALARY.			
Policemen.....	392.91	1,094.78	278

BUILDING, ENGINEERING, AND PRINTING TRADES.

GREAT BRITAIN.

[Table D1.]

The following information was obtained from a British Government publication entitled, "Report of an Inquiry by the Board of Trade into Working Class Rents and Retail Prices, Together with the Rates of Wages in Certain Occupations in Industrial Towns in the United Kingdom in 1912."

Occupations :

Building trades (average wage per hour)—

Bricklayers	\$0. 18
Masons .....	. 175
Carpenters .....	. 175
Plumbers .....	. 175
Plasterers .....	. 175
Painters .....	. 16
Bricklayers' laborers .....	. 115
Masons' laborers .....	. 115
Plasterers' laborers .....	. 12

Engineering trades (average wage per week)—

Fitters	8. 64
Tinners	8. 64
Pattern makers	9. 30
Iron molders	9. 36
Laborers	4. 98

Printing trades (average wage per week)—

Compositors	7. 80
-------------------	-------

In the case of the building trades the number of hours of employment per week and the number of weeks per year is not given, nor is the number of weeks per year for the engineering and printing trades. The rates for the building trades in the United States are given in the same form, so the comparison can be made without further computation.

The rates of wages for the engineering and printing trades are given by the week.

UNITED STATES.

[Table D2.]

The following information was obtained from a United States Government publication entitled, "Bulletin of the United States Bureau of Labor Statistics (whole number 143)."

The average wage ("union") per hour in 1912 for localities covering the entire United States was as follows. Only those occupations are here given on which figures for Great Britain were available:

	Average per hour.	Average hours per week.
Building trades:		
Bricklayers.....	\$0.6549	
Masons.....	.5864	
Carpenters.....	.4974	
Plumbers and gas fitters.....	.5782	
Plasterers.....	.6416	
Painters.....	.4397	
Bricklayers' laborers (hod carriers).....	.3577	
Plasterers' laborers.....	.4096	
Engineering trades:		
Steam fitters.....	.5567	46.2
Pattern makers.....	.4390	52.0
Iron molders.....	.3654	54.4
Laborers.....	.2636	46.0
Printing trades:		
Compositors.....	.4978	46.5

As the figures for the engineering and printing trades for Great Britain are given as weekly wage, it is necessary to compute the weekly wage for those trades in the United States. Assuming that the employment for the week is constant, we have:

Engineering trades (average per week):	
Steam fitters.....	\$25.72
Pattern makers.....	22.83
Iron moulders.....	19.88
Laborers.....	12.12
Printing trades (average per week).....	23.15

POSTMEN (LETTER CARRIERS).

GREAT BRITAIN.

[Table E1.]

The following information was obtained from a United States Government publication entitled, "Bureau of Manufactures, Special Agents, Series 37-43, 1909-1915."

The following figures are for 1910:

Cities (rate per week) :	
London.....	\$5.10 to \$8.51.
Dublin.....	6.32 (average) (\$328.67 per year).
Sheffield.....	5.57 (average).
Manchester.....	5.57.
Birmingham.....	4.37 to 7.29.
Glasgow.....	6.66 (average).

No figures are given as to the number of postmen in each city, so it is only possible to average the rate of pay for the six cities. This gives the average yearly pay as \$318.24.

UNITED STATES.

[Table E2.]

The following information was obtained from the published report of the Postmaster General for 1910:

Number of city letter carriers.....	28, 713
Amount paid to city letter carriers.....	\$29, 178, 655. 97
Average pay of carrier.....	\$1, 016. 14

The above does not take into account the amounts paid as follows, because it was not definitely known whether or not the numbers of these carriers was included in the item "city carriers":

Carriers, second-class offices.....	\$93, 589. 03
Substitute carriers	1, 056, 916. 83
Carriers for new offices.....	63, 416. 81

SCHOOL TEACHERS.

GREAT BRITAIN.

[Table F1.]

The following information was obtained from a United States Government publication entitled, "Senate Document, Vol. 46, Sixty-first Congress, second session, 1909-1910."

The following figures are for 1910:

Cities.	Class of teachers.	Pay per year.
Manchester.....	Masters.....	\$583.98 for first 4 years. \$656.97 for second 4 years. \$759.17 for third 4 years. \$851.63 for over 5 years.
	Mistresses.....	\$389.32 for first 4 years. \$437.98 for second 4 years. \$486.65 for third 4 years. \$535.31 for over 5 years. \$587.62 average per year.
	Assistant teachers (men):	
	Class A.....	\$778.64.
	Class B.....	\$729.97.
	Class C.....	\$535.31.
	Class D.....	\$389.32.
	Assistant teachers (women):	
	Class A.....	\$583.98.
	Class B.....	\$535.31.
	Class C.....	\$413.65.
	Class D.....	\$316.32.
	Average for the 4 classes.....	\$535.32.
	Average for all teachers.....	\$561.47.
Birmingham.....	Masters (mixed schools).....	\$1,333.42 (average maximum salary).
	Mistresses (girls' schools).....	\$815.14 (average maximum salary).
	Mistresses (infants' schools).....	\$859.75 (average maximum salary).
	Assistant mistresses.....	\$419.72 (average maximum salary).
	Chief assistant master (secondary schools).....	\$875.97 (average maximum salary).
	Assistant master (secondary schools).....	\$632.64 (average maximum salary).
	Assistant mistresses (secondary schools).....	\$510.98 (average maximum salary).
	Average, all teachers.....	\$778.23.
Liverpool.....	First master (mixed schools).....	\$632.64 to \$973.30.
	Assistant masters (mixed schools).....	\$267.65 to \$729.97.
	Headmasters, class A.....	\$462.31 to \$973.30.
	Headmasters, infant department.....	\$462.31 to \$875.97.
	Mistresses, infant department.....	\$462.31.
	First masters.....	\$486.65 to \$827.30.
	Assistant masters.....	\$170.32.
	Average, all teachers.....	\$568.33.
Glasgow.....	Headmasters.....	\$158.61 (average).
	Second masters.....	\$851.63 (average).
	Assistant masters.....	\$577.89 (average).
	Mistresses.....	\$456.23 (average).
	Average, all teachers.....	\$866.84.
Dublin.....	Principal teachers.....	\$710.50 (men).
	do.....	\$583.98 (women).
	Assistant teachers.....	\$423.38 (men).
	do.....	\$355.25 (women).
	Average, all teachers.....	\$518.27.

Average salary for the 5 cities, \$658.63.

This is, of course, not the true average of salaries paid, as no figures are obtainable showing the actual number of teachers employed in the various grades. The above is the best approximation we can make. As there are a greater number of teachers employed in the lower grades than in the higher, our result is, of course, higher than would be the case were complete figures available.

UNITED STATES.

[Table F2.]

The following information was obtained from a United States Government publication entitled "United States Bureau of Education, Bulletin No. 31, 1915 (whole number 658)."

This publication gives salaries of school-teachers for 58 cities. However, as data for Great Britain are only available for five cities, and as all of these are over 100,000 population, only those of the United States having a population of over 100,000 were taken from the list. These were as follows:

	Average per year.
San Francisco, Cal-----	\$1, 124. 00
Denver, Colo-----	552. 00
Washington, D. C-----	982. 00
Atlanta, Ga-----	623. 00
Indianapolis, Ind-----	761. 00
Baltimore, Md-----	692. 00
Boston, Mass-----	1, 001. 00
Fall River, Mass-----	642. 00
Minneapolis, Minn-----	937. 00
New York City-----	1, 197. 00
Cleveland, Ohio-----	791. 00
Dayton, Ohio-----	654. 00
Portland, Oreg-----	1, 006. 00
Richmond, Va-----	578. 00
Seattle, Wash-----	1, 021. 00

Average for the 15 cities above, \$837.66.

POLICEMEN.

GREAT BRITAIN.

[Table G1.]

The following information was obtained from a United States Government publication entitled "Bureau of Manufactures, Special Agents, Series 37-43, 1909-1910."

The following figures are for 1910:

Cities.	Class.	Pay per week.	Average pay per week.
London	City	\$6.56 to \$10.23	\$8.44
	Metropolitan	6.19 to 8.51	7.35
	Reserves	9.24	9.34
	Average all policemen		8.38
Sheffield	Average per year, \$435.76.		
	City	6.33 to 8.52	7.42
	County	5.84 to 7.54	6.69
	Average all policemen		7.05
Nottingham	Average per year, \$366.60.		
	City		7.41
Manchester	Average per year, \$385.32.		
	City	6.33 to 8.52	7.42
	County	5.84 to 7.54	6.69
	Average all policemen		7.05
Birmingham	Average per year, \$366.60.		
	City	6.10 to 8.51	7.30
	Average per year, \$379.60.		

As the figures available for the United States consider only city policemen, only city policemen are taken for Great Britain. We find the average yearly pay of policemen in the five cities above to be \$394.47.

UNITED STATES.

[Table G2.]

The following information was obtained from a United States Government publication entitled, "United States Bureau of Education, Bulletin, 1915, No. 31 (whole number 658)."

This publication gives pay of policemen in 57 cities. However, as data for Great Britain are only available for 5 cities, and as all of those are over 100,000 population, only those of the United States having a population of over 100,000 were taken from the list. These were as follows:

	Average per year.
San Francisco, Cal.....	\$1,464.00
Denver, Colo.....	1,050.00
Washington, D. C.....	1,165.00
Atlanta, Ga.....	990.00
Indianapolis, Ind.....	1,080.00
Baltimore, Md.....	900.00
Boston, Mass.....	1,316.00
Fall River, Mass.....	945.00
Minneapolis, Minn.....	980.00
Cleveland, Ohio.....	1,177.00
Dayton, Ohio.....	960.00
Portland, Oreg.....	1,080.00
Richmond, Va.....	1,080.00
Seattle, Wash.....	1,140.00

Average for the 14 cities, \$1,094.78.

THE COORDINATION OF THE MOBILE AND COAST ARTILLERY UNITS OF THE ARMY IN THE NATIONAL DEFENSE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

WCD 8911-9

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SYNOPSIS.

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THE COORDINATION OF THE MOBILE AND COAST ARTILLERY UNITS OF THE ARMY IN THE NATIONAL DEFENSE.

I. INTRODUCTION.

1. RELATION BETWEEN STATECRAFT AND WAR.

In our country public opinion estimates the situation, statecraft shapes the policy, while the duty of executing it devolves upon the military and naval departments. In settling disputes under our foreign policies, the weapons of our statesmen are, first, diplomacy and, second, war; when diplomacy fails to settle the matter in dispute, it may be necessary to resort to war. Should such a contingency arise, we must be prepared to meet the enemy on sea and land. This preparation should be adequate at all times or else our national policies will be aborted or frustrated. Such preparation includes as its most vital element the development of our land and sea forces.

2. DEFENSE AGAINST OVER-SEA INVASION.

The object of this study is to treat primarily of operations which will come in one way or another from the sea and to which we are most vulnerable. Consideration is therefore limited to operations possible along our seacoast, and an attempt is made to show clearly the correlative functions of the Army and the Navy and the resultant necessity of the cooperation of the *mobile* and *coast artillery* units of our land forces so as to best utilize our means of defense, in conjunction with our Navy.

3. FUNCTION OF THE NAVY.

Upon the Navy devolves the solution of the problem of securing and maintaining control of the sea. To accomplish this it must be free to take the offensive promptly, that is, to seek out and defeat the enemy fleet. The use of any part of the high-sea fleet for local defense defeats the chief object of the Navy, and is a misuse of naval power. A fleet defeated at sea and undefended by an adequate army is powerless either to prevent invasion or even its own ultimate destruction by combined hostile land and naval forces.

4. FUNCTION OF THE ARMY.

Upon the Army devolves the task of gaining and maintaining on shore the ascendancy over hostile land and naval operations. To accomplish this it must be able to seek out promptly and to defeat, capture, or destroy the invader wherever he may attempt either to secure a footing upon our territory or to enter the waters of our harbors with the object of threatening the destruction of the seaport or of a fleet driven to seek refuge or repair therein.

II. FUNCTION OF THE MOBILE AND COAST ARTILLERY TROOPS.

5. TWO CLASSES OF TROOPS REQUIRED.

Experience has shown that our Army must consist of two distinct classes of troops—that is, *mobile troops* and *coast artillery troops*. Broadly speaking, the principal function of our mobile troops is to oppose an *invading army*, while that of our coast artillery is to oppose *direct naval attacks*.

6. MOBILE TROOPS.

The best defense can be accomplished only by the ability to resort to offensive operations. Our mobile troops are organized on the basis of being able to resort to offensive as well as defensive operations. Some of the functions of the mobile troops are:

(a) To furnish detachments of mobile forces sufficient for the protection of harbor defenses and naval bases against landing parties during naval raids which, under modern conditions, may precede a declaration of war.

(b) To oppose an invading army and to operate in any possible theater of war.

(c) To furnish adequate mobile forces to protect our principal cities by preventing the landing of hostile expeditions for their capture in the intervals between our fortified harbors or near such cities.

The only reasonable way in which these localities not covered by fixed defenses can be defended is:

(1) By providing a mobile land force of sufficient strength, so located that it may be thrown in at threatened points at the proper time.

(2) By supplying in addition modern movable coast defense armament of heavy types to resist the direct naval attack of the covering fleet.

7. COAST ARTILLERY.

Our coast artillery is primarily organized for defensive operations. Some of its functions are:

(a) To prevent naval occupation of important strategic and commercial harbors.

(b) To prevent naval bombardment of such cities and military and naval bases as are protected by seacoast fortifications.

(c) To furnish a strong, fortified base from which submarines and other naval vessels, acting on the offensive, may operate.

(d) To repel a fleet supporting a landing in force within range of the guns of a fortified harbor.

(e) To cooperate with the mobile troops in the landward defense of seacoast fortifications.

With the development of modern movable artillery of large caliber and long range, the functions of the coast artillery will be extended to repelling direct naval attack at certain unfortified harbors and favorable landing beaches in the intervals between the present fortified harbors, under the commanders of the mobile forces.

III. MUTUAL DEPENDENCE OF MOBILE AND COAST ARTILLERY TROOPS.

8. COOPERATION OF MOBILE AND COAST ARTILLERY UNITS.

While our Navy retains command of the sea, the only invasion possible would come from raiding parties, limited in numbers, which an enemy fleet might land. In addition, therefore, to the coast artillery troops required to man the emplaced batteries and the mine defense of our fortified harbors, sufficient mobile troops should be provided to repel local raiding parties that might land to attack the fortifications. The personnel of the Army assigned to the fixed-gun defense, the mine defense, and the land defense in the immediate vicinity of the fortifications, may be classed while on this duty as immobile to the extent that their duties are local and pertain particularly to the harbors to which they are assigned. Thus it is manifest that a portion of our mobile troops must be used at times as fortress troops, while the development of modern high-power movable coast-defense armament of heavy types will render a portion of our coast artillery troops more or less mobile.

Should our Navy lose command of the sea, the fleet will seek refuge in our fortified harbors, under the protection of their guns. Here they may repair and refit, and they may be able to render valuable assistance in opposing the landing of an invading army. Assuming that our preparations are sufficient to prevent the enemy fleet from capturing the armament of our fortified harbors, running by the forts, or from resorting to distant bombardment of the cities thereon, he will be forced to attempt any landing (his only other means of inflicting damage) in the intervals between the fortified harbors. This effort can be frustrated only by *adequate* mobile forces held at strategic centers near the coast and rushed to the threatened points at the proper time. This force should be sufficient

in numbers, training, armament, and equipment to accomplish its purpose.

In defending the intervals between our fortified harbors, the movable coast artillery becomes one of the auxiliary elements of the mobile force; mutual dependence of the two kinds of troops along our coast line and frontier makes their cooperation imperative; movable heavy coast artillery armament renders such cooperation more effective.

9. LANDINGS AT UNFORTIFIED POINTS.

History shows that landings at unfortified points have always been effected when backed up by the fire of a fleet. This is well illustrated in the recent landings on the Gallipoli Peninsula, where the allied fleet, after being defeated in the attempt to run by or reduce the Dardanelles batteries, supported the allied army on Gallipoli and enabled it to land, despite the vigorous defense of the Turkish mobile forces.

10. RÔLE OF MOVABLE COAST ARTILLERY.

With the development and employment of large caliber movable coast artillery, it is confidently believed that at points near our coastal railroads the covering fleet may be held off at such a distance as to prevent the use of the secondary batteries in supporting the landing, which is therefore liable to be defeated by the fire of field artillery and small arms before reaching the shore. Thus it is manifest that the development of heavy movable artillery will greatly strengthen our coast defense. This type of ordnance may be concentrated at points under attack, and when no longer required there can be rapidly shifted to other threatened points on the coast, where its effect would be the greater in that it would be in the nature of a surprise to the enemy, thus enabling the coast artillery and heavy field artillery to cooperate with the other mobile troops in the protection of the intervals between the fortified harbors. The development of a heavy type of movable artillery forms another link between the coast and field artillery and between our present coast artillery and mobile troops. Unfortified anchorages and favorable landing beaches near our coastal railroads may be protected against direct naval attack; the enemy fleet may be driven out of range of the coast artillery, and the invading army deprived of the support of the fleet during the landing. The transports will, of course, be compelled to lower their boats out of range of these batteries, and an excellent opportunity will be given to our mobile troops to defeat the invaders before they can set foot on the shore.

11. DEVELOPMENT OF HEAVY MOVABLE ARMAMENT IN EUROPEAN WAR.

All information from the European armies shows that the development and employment of heavy movable artillery is one of the most prominent features of the present European war. It has been successfully employed there in demolishing fortifications and in blasting the enemy out of his trenches. While the general character of roads and bridges in the United States will undoubtedly operate to restrict the use of the large-caliber guns and howitzers in field warfare, there is no question of the feasibility of their employment as movable coast artillery along our coastal railroads. Descriptions given in the newspapers and illustrated periodicals and the moving pictures of war scenes and implements shown at our theaters illustrate how this heavy movable ordnance may be thus employed.

Successful tests have been made with the 12-inch Navy gun mounted on specially constructed railroad car. This gun as mounted has a range of about 13 miles, and fires a projectile weighing about 800 pounds with over 200 pounds bursting charge; it is transported on and fired from its specially designed railroad car. On account of their mobility these guns can be moved rapidly to the menaced points of the coast, be immediately prepared for action, and when threatened by the enemy's superior artillery can retreat or change position in a minimum time. In fact, this uniting of a certain number of pieces of artillery constitutes a mobile fort, powerful and economical. In addition to these heavy gun batteries, heavy howitzers have been similarly mounted on specially constructed railroad trucks, from which they are fired without having to construct platforms to receive them; the trucks are braced before firing to support the shock of discharge.

In line with the above, our Ordnance Department has prepared estimates for a 14-inch gun to be transported on and fired from a specially designed railroad truck. This gun is to have a range of 30,000 yards (17 miles) and to fire a shell weighing 1,660 pounds.

The 30.5 centimeter (12-inch) Austrian Skoda mortar is practically our 12-inch seacoast mortar, while the 42 centimeter (16.5-inch) mortar (Krupp) is larger than any now emplaced in our fortifications; it fires a shell weighing about 1,800 pounds. Both of these types of mortars are readily transported by railroad, or over exceptionally good roads and bridges by motor tractors. From photographs and descriptions of these mortars and carriages it is apparent that heavy ordnance of this type can be effectually *employed as an adjunct to our seacoast fortifications.*

These developments abroad suggest the tremendous gain the employment of heavy movable artillery will give us in the defense of

our coast. In addition to the fixed defense of our fortified harbors, the employment of *heavy movable artillery* will make it possible to defend not only our important strategic fortified harbors and naval bases, but also to repel a hostile fleet supporting a landing in force at points on our coastal railroads. It is understood that the War Department's estimates to Congress will include 14-inch seacoast guns mounted on specially designed railroad trucks, and 16-inch mortars mounted on movable carriages. If these are provided the area of operations of our coast artillery will be materially extended. Certain unfortified anchorages and beaches favorable for landing, as well as the present fortified harbors, may be successfully defended against direct naval attack.

12. ADEQUATE MOBILE TROOPS NECESSARY.

It should be understood, however, that the employment of movable coast artillery is principally against a direct naval attack, as is the employment of fixed guns in our fortified harbors and naval bases. In landing troops for an attack against a fortified harbor an enemy would naturally select a landing place out of range of its guns.

Mobile troops would be necessary to defend and support the heavy guns, whether fixed, as in our fortifications, or movable, as along our railroads.

The employment of heavy artillery alone could not prevent an enterprising enemy from landing troops. Heavy movable ordnance may indeed render valuable assistance to our mobile troops in repelling a landing in force in the *intervals* between our fortified harbors, but trained mobile troops can be successfully opposed only by the employment of trained mobile troops against them. It should be borne in mind that our coast line consists almost entirely of "intervals." The fortified harbors are few in number and far apart. Even with the addition to our armament of heavy movable artillery along our coastal railways, there would still remain numerous long stretches of our coast line and anchorages affording facilities for landing operations which could only be opposed by mobile troops acting without the cooperation of the Coast Artillery. The United States should therefore have sufficient trained, organized, and equipped mobile troops to defeat at the coast line or frontier the army that any over-sea power could bring against us.

13. LAND DEFENSE OF SEACOAST FORTIFICATIONS.

The defense of the fortified harbors on the land side must be in the hands of the mobile troops. From the time of actual investment by the enemy's army it is essential that all of the fixed armament in the seacoast fortifications capable of being used in the land de-

fense be so mounted that it may be fired landward as an adjunct of the Field Artillery as well as seaward against the hostile navy.

Generally speaking, the seacoast mortars (which have all-around fire) are the only parts of the heavy fixed armament now so emplaced that they can be used in the land defense, but at all forts susceptible to land attack, other elements of the fixed armament should be mounted in the future for all-around fire, where practicable, without sacrificing range and adequate protection against naval attack. Such as are susceptible of being mounted on movable carriages should be so mounted, with the largest calibers and longest ranges possible of development for such mounting. To make the fire of the seacoast armament effective against the enemy's land batteries and trenches it is essential that suitable ammunition and fuses be provided, that an effective means of range and position finding be adopted; that accurate maps of the land area within the range of the fixed armament be provided, and that *ample aero equipment* be furnished for reconnoissance work and for correction of fire. The heavy artillery can, by the adoption of these means, use its trained personnel to the best advantage to assist the mobile troops in the defense of the fortifications.



**STUDY ON
THE DEVELOPMENT OF LARGE CALIBER, MOBILE
ARTILLERY, AND MACHINE GUNS IN THE
PRESENT EUROPEAN WAR**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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STUDY ON THE DEVELOPMENT OF LARGE-CALIBER MOBILE ARTILLERY AND MACHINE GUNS IN THE PRESENT EUROPEAN WAR.

1. ARTILLERY.

At the outbreak of the present European war two schools of artillery thought had gradually developed among the European nations. One school, fostered by the French, believed in the low-power, rapid-fire field gun of about 3-inch caliber, and contended that with a reasonable supply of ammunition it was possible to render heavy field or siege artillery powerless with such a gun; the second school, headed by the Germans, although believing in the low-power, small-caliber, rapid-fire fieldpiece, believed that they must be reenforced by a considerable number of heavier howitzers or field guns, which were to be used to combat the ordinary field-pieces as well as such entrenchments as could be constructed by armies in the field and for long-range firing when necessary.

In general, Germany and Austria were the only European countries that had developed efficient large-caliber mobile artillery at the outbreak of the present European war, but this war has developed the use of the large-caliber artillery by all of the belligerent countries. This development of heavy mobile artillery in Germany, Austria, and France is shown in attached "Notes on development of large-caliber mobile artillery."

How the thoughts of the majority of the field-artillery officers influenced the artillery organization of France and Germany is best shown by their army organization as it existed at the outbreak of war, as shown by the following table:

Country.	Number of of 3-inch field guns per 1,000 rifles.	Number of light field howitzers per 1,000 rifles.	Number of heavy field howitzers per 1,000 rifles.	Total.
France.....	4.66	.....	0.206	4.87
Germany.....	4.12	1.37	.61	6.1

This table shows that at the outbreak of war Germany had about one-half of a light field gun (about 3-inch) less than France per 1,000 combatants. Germany, on the other hand, had 1.37 light field howitzers per 1,000 combatants more than France had, and had 3

heavy field howitzers of about 6-inch caliber for every 1 possessed by France.

The proportion of heavy field howitzers was in reality much more than the table indicates, for, as is well known, France only had a total of twenty-four 4-gun batteries of 6-inch howitzers when the war opened, whereas Germany had more than one hundred and ninety 4-gun batteries of 6-inch howitzers.

We may say that the results of the war have justified not the French but the German organization, and that as a result the French have taken up the German idea and are now doing, and have been doing for many months past, everything they can to meet the German preparedness in heavy field artillery material by equipping their army with heavy field guns and howitzers. It is of interest to note that the French 6-inch howitzer had a maximum range of about 6,600 yards, whereas the corresponding German gun, although older in years, had a maximum range of 7,700 yards. In other words, the French were not only outclassed in number but also in the power of the individual gun.

In addition to this 16-centimeter (6-inch) howitzer, which was assigned at the rate of 4 batteries of 4 guns each to each army corps, Germany had a certain number of heavy gun batteries of 10-centimeter (3.94-inch) and 13-centimeter (5.12-inch) caliber and a field 28-centimeter (11.3-inch) mortar battery. The exact number of these batteries is unknown.

The successes of the German army for the first four months of the war can be attributed, in a great measure, to the heavy field artillery with which they were equipped, and to its proper handling. Our observers all state that the moral actual effect produced on the French in the opening battles of the war by the heavy German field artillery was tremendous, and came to most of the Frenchmen, who had been taught and had believed that the 75-millimeter gun was the ruler of the artillery world, as a terrific shock. At the commencement of the war the French did not take the trouble to entrench nor conceal their artillery the way they do now; the result was that the heavy German batteries, when used as counterbatteries and assisted by aeroplanes, had a clear field and managed to destroy whole battalions of the light 75-millimeter French guns without the latter being able to do them any harm. After the opening battles of the war the French realized that they must have heavy field artillery, and made every effort to obtain it as soon as possible. The result was that between August, 1914, and March, 1915, they had sent a number of 4-gun batteries of 10.5-centimeter guns to the front and had adopted and issued to the service a considerable number of new 15-centimeter rapid-fire howitzers, and had started to construct 14-inch mortars. In other words, a few months after the war started

the French school of artillery thought had completely veered around and adopted the German artillery idea.

From the artillery point of view, the lesson to be learned from the war is the same lesson that has been taught by every war since the discovery of cannon, namely, that everything being equal, the side having the heaviest gun and the best ammunition-supply system is the one that is best able to give the proper support to its infantry, and therefore has the greatest chance of success.

Before the present war started most of our artillery officers believed that the heaviest field gun or howitzer which would be needed by an army was the 6-inch howitzer firing a 120-pound projectile, and in justice to them it must be stated that, with the exception of the German and Austrian Armies, this belief was general. They also believed that the function of the heavy field guns of more than 6-inch caliber, which it was known Germany and Austria possessed, was to destroy field forts of steel and concrete, and that it would not be possible to transport either of these guns or the ammunition they required with the field armies. How wrong this assumption was is shown by the present war in which the Germans and Austrians have actually transported with their field armies 11-inch howitzers, 12-inch howitzers, 16-inch howitzers, and 17.7-inch howitzers and used them, not for the purpose of destroying works of steel and concrete, but for the purpose of destroying field fortifications, supply depots in rear of the line, villages in which troops are quartered, wire entanglements and other obstacles. All reports now indicate that the great successes obtained by the German and Austrian Armies on the eastern front were due in no small measure to the use of these enormous fieldpieces, which must hereafter be considered as essential to success in war.

The lesson to be learned as to the amount of artillery to be assigned to the different units has been taken advantage of by the General Staff, who, in the organization recommended in their military policy, have increased the number of Field Artillery regiments with each Infantry division from two to three, and in the report of a board of officers which recently recommended that the heavy field artillery with each field army be increased from one to three regiments. These recommendations, if carried into effect, will result in the following proportion of guns per 1,000 combatants:

	Field gun.	Light field howitzer.	Heavy field gun and howitzer.	Total.
United States.....	2.70	1.35	1.12	5.17
Germany.....	4.12	1.37	.61	6.10

The percentage of guns provided by Germany for her army is shown above for the purpose of comparison. It shows that before the war Germany had 1.42 more field guns per thousand combatants, about the same number of light field howitzers, and 0.51 of a heavy field gun less than we now contemplate. The number of heavy field guns given in the above table for Germany does not include any guns heavier than the 16 centimeter (6-inch howitzer), whereas for us it included the heavier contemplated fieldpieces. The proposed contemplated scheme for procuring enough guns, ammunition, and other necessary field artillery material to equip 1,000,000 men will involve the expenditure of about \$470,000,000 over a period of 8 years, and, when completed, will only provide for about twice the number of guns used by Marshal Mackensen's army in the Galician campaign. In other words, if the scheme is approved by Congress, in eight years from now we will have about enough guns and ammunition and other necessary stores to supply two German field armies.

2. ARTILLERY AMMUNITION.

Before the present war no one ever dreamed of the amount of ammunition that would be required to keep the armies supplied, and if he did dream of it he kept his dream to himself for fear of being called crazy. It was known that at the beginning of the war both France and Germany had a reserve supply of small-caliber field-gun ammunition of about 2,500 rounds per gun, and a corresponding amount for the larger fieldpieces on hand, and were splendidly equipped with facilities for manufacturing ammunition of all kinds in large quantities. Notwithstanding their reserve supply, which was considered immense at that time, and their facilities of manufacture, both these nations found themselves confronted with a most serious shortage of ammunition before the war had been going on very long, and in the case of France at least forced her to practically suspend operations for a protracted period.

At the present time the reserve supply of ammunition to be kept on hand per gun is considered as that necessary to wear out the gun; in other words, during peace a sufficient amount of ammunition should be accumulated for each gun to permit it to fire as long as it is capable of doing so. For a 3-inch field gun this amounts to about 5,000 rounds per gun.

The question of ammunition supply has become such an important one that France and England have both placed cabinet ministers in charge of it; and England, so far as we know, has not solved the problem to date.

3. AERO SERVICE FOR FIELD ARTILLERY.

Aeroplanes are now recognized as indispensable adjuncts of the Field Artillery. The following will illustrate some of the service performed by the Aviation Corps:

- (1) General reconnoissance work.
 - (2) To discover exposed batteries of the enemy.
 - (3) To test concealment of their own batteries.
 - (4) To direct artillery fire on enemy's batteries and trenches.
- Observation captive balloons are employed, as shown by the following report:

The officers who conduct the fire of these guns are well up in the trenches, connected with their guns or batteries by telephone wires, which are usually run along the walls of the communication trenches and held in place by staples. In one second-line trench I counted 11 different telephone wires running out to different observation trenches. In addition to the observation posts in the advance trenches there is another method employed by both sides during the day; it is the *Drachen*, or sausage-shaped captive balloon which is sent up at daylight and remains all day until dark, at altitudes varying, I should estimate, from four to eight hundred yards, and far enough in rear of the lines to escape artillery fire, if directed against it. The observer in this balloon is equipped with telephonic communication and powerful glasses. This silent sentinel remains up rain or shine, and both sides have the greatest respect for its power of observation. We were not allowed to assemble in groups in view of them at the front.

These observers are on the alert at all times, and we were informed that where groups of 5 or 10 appeared in the open, a shell was usually sent in their direction as a warning that nothing escaped their observation. These balloons are so generally used by both sides that during a clear day they can be seen up and down the lines as far as the eye can reach. I counted eight along the front—Notre Dame de Lorette—St. Eloi. They are used also, I was informed, very often in directing the fire of heavy artillery. The steadiness of this shape of balloon, even in a strong wind, is quite remarkable.

The War College Division has not made recommendation as to aviation equipment needed, as tests are now being made under direction of the Field Artillery Board at Fort Sill, Okla.

4. CONCLUSION.

In general, the opinion of foreign officers and all of our observers abroad is that the *largest* calibers are the most effective and have done the work in this war with high-explosive shell.

The large-caliber howitzers and mortars with high-explosive shells are employed not only to reduce concrete forts, but are generally used now against fieldworks and entrenchments of all kinds.

Every effort should be made to provide our Army with large-caliber mobile artillery and ample aero equipment.

5. MACHINE GUNS.

Machine guns have played a most important part in the present war, and have been extensively used by all sides, under all conditions, and have proven their worth.

The following table shows the number of machine guns per 1,000 men of Infantry or Cavalry provided for by the organizations of the European armies at the opening of the war, and also the proposed proportion contemplated for our Army in the tables of organization:

	Army Corps.		Infantry Division.		Reserve Infantry Division.		Cavalry Division.
	Infantry.	Cavalry.	Infantry.	Cavalry.	Infantry.	Cavalry.	Cavalry.
Germany.....	2	.....	2	.....	2	.....	1.67
France.....	2	2.2	2	.....	1.32	2.2	1.67
Russia.....	2	.....	2	.....	.....	.....	2.20
United States.....	.....	.....	2.12	3.24	.....	.....	3.24

Since the war started it is positively known that all the warring nations have greatly increased the number of machine guns with their armies. Exactly what this increase has been is, however, unknown. Reports received from our observers indicate that there is about one machine gun for every 30 yards on the western front. At the commencement of the war the Germans had 64 and the French 66 guns per army corps.

6. CONCLUSION.

It is believed that machine guns at the rate of 6 per battalion of Infantry or squadron of Cavalry should be provided for our Army, or 18 machine guns per regiment of Infantry.

NOTES ON DEVELOPMENT OF LARGE-CALIBER MOBILE ARTILLERY IN EUROPEAN WAR.

GERMANY.

The Germans had 42-centimeter (16.5-inch) mortars, 28-centimeter (11.023-inch) Krupp siege howitzers, and 21-centimeter (8.4-inch) howitzers at the outbreak of war. These mortars and howitzers were employed in the reduction of the Belgian fortifications.

The *42-centimeter (16.5-inch) mortars* are transported by rail, and spur tracks are run directly to the edge of the pits in which they are emplaced. It is probable that a derrick car is used to mount the parts of the carriage and the mortar and also to handle the shell, which weighs about 2,000 pounds.

In the recent German-Austrian offensive in Galicia, May 2 to June 25, 1915, large-caliber howitzers and mortars were used with marked success against field intrenchments and field works.

In addition to the regulation quota of artillery pertaining to the divisional organization, there was assigned to the army for the special mission a large quantity of heavy artillery, including certain 21-centimeter howitzers, 28-centimeter seacoast mortars, 30.5-centimeter mortar batteries, and probably some 42-centimeter mortars, as these were used later in the campaign at Przemyśl.

* * *

The present war has shown that we must revise our views as to what constitutes "field" artillery. With ordnance having calibers as large as 30.5 centimeters, moving steadily along with the troops, the artillery features of present-day combats have received a marked development. Thanks to this heavy ordnance, the German-Austrians were enabled to break down the material and moral resistance of the Russians at all their strongly prepared positions, and to prepare the way for assault of the infantry, which found its task relatively easy. At ——— the ——— had a ring trench about 200 feet in diameter on the summit of a low knoll forming a closed work about 250 yards in rear of a long rifle trench lower down a gentle slope. Within this ring trench were seven craters made by 30.5-centimeter (12-inch) mortar shells, some of the craters intersecting and sections of the trench having been obliterated. At Hill ——— on the ——— position in front of ——— the Russians had a strong fieldwork consisting of a double tier of trenches with overhead cover, traverses and splinter proofs. This was assaulted and carried by a division after about 2 hours' artillery preparation by 21-centimeter (8.25-inch) howitzers and 30.5-centimeter (12-inch) mortars, with almost negligible losses. This work was inspected before the field had been cleared, and it was easy to understand how demoralized and shaken its defenders must have been in consequence of the effective artillery fire. About 100 corpses lay in or close to the trenches, most of them terribly mangled, even with clothes torn from the body by the blast which occasionally blew them out of the trenches on the ground in the rear. Whole sections of the parapet were obliterated and splinter proofs were wrecked. This work was built along the edge of a pine groove which was almost leveled to the ground by the artillery fire. Again at ———, the work on knoll ———, to the west of ———, a very strongly built fieldwork with strong, wide wire entanglements, was bombarded for an hour with heavy artillery with similar effects to those described above. The attack of field fortifications by 12-inch ordnance is a novel feature in war, but in no other way can the strongly built positions, which an enemy can build in a few days, be prepared for assault by infantry. The transport of such heavy field ordnance, and, more particularly of the needful ammunition supply, of course, presents tremendous difficulties, and, without fairly good roads, is impracticable * * *.

During long trips, on four different days, over practically all the roads between the ——— and ———, military transportation of every kind, from the light, native country wagon, hauled by two diminutive horses, to the heavy motors, hauling 28 and 30.5 centimeter mortars, where encountered moving steadily to the front without any serious difficulties * * *.

In their previously prepared positions, the ——— showed some fine examples of technical work, their fire trenches being invariably provided with overhead cover, and with plenty of splinter proofs close at hand. It was only because of their free use of the heaviest artillery that the German-Austrians were able to break the lines.

The Germans have, on several occasions, fired 38-centimeter (15-inch) shells into — from a distance, it is estimated, of 30 kilometers (18.7 miles); where these shells have fallen they have caused great destruction.

The success of the 42-centimeter mortar and the excellent results secured from this weapon have steadily spurred the Krupp Co. on to developing even larger and better calibers of guns. It is claimed that the Krupp Co. has now perfected the 54-centimeter (21.26-inch) gun with a range of about 38 miles.

AUSTRIA.

The Austrian army infantry division had, at the outbreak of the war, about 42 field guns and howitzers per division of 12,000 rifles. This percentage is exclusive of the corps artillery which is composed of 8 heavy howitzers.

As the war went on the number of batteries has been increased in various ways until there are now probably 50 field guns per division. The corps artillery remains as at the beginning, but the field army artillery, composed of 24, 30.5 and 45 centimeter (17.7-inch) mortars, is being constantly increased and is used as field artillery.

The Austrians are using their large guns up to 45 centimeter (17.7-inch) against fieldworks, field guns, storage depots, railway stations and villages, where troops are quartered, and to tear up barbed wire and other entanglements. These uses are made because the guns are available.

The writer visited three forts of — shortly after the fortress was captured. The Germans had used 42-centimeter mortars to prepare the forts, but what part of the destruction of the concrete work was done by the German shells or what part by the — when they surrendered the fortress to the — is not known, but it may be stated that the moral effect of the bombardment was very great, for the — defense was weak when the infantry assault took place.

The — had very few guns of position in — and the mobile artillery was reduced as much as possible to provide field artillery for the field army. In one artillery position were found two 8-centimeter field guns and a 5-inch gun stood on the road nearby, showing that it had been in use in the vicinity. In one of the forts there was a rapid-fire gun pedestal mount of 3-inch caliber. These were the only guns seen.

The writer has seen the effect of fire of the 30.5 centimeter (12-inch) and 45 centimeter (17.7-inch) mortars on semipermanent earthworks. The craters on the hill in rear of the line of works were 20 feet deep and 30 feet in diameter, and the blast from the explosion of the shells must have been tremendous. The usual killing radius mentioned by — officers was 200 meters, but it is scarcely that great, but it is great enough to cause the — to have a profound respect for the "ammunition wagons," as the soldiers called them.

Artillery fire is very effective when the target is suitable; for instance, enfilading artillery fire is feared. It is to be doubted whether the 3-inch gun produces the effect on moving lines in the open which might be expected; but the heavy shell fire from field howitzers is very effective as a morale destroying agent.

FRANCE.

At the outbreak of war, the mobile artillery consisted of substantially the following calibers:

- 65-millimeter (2.56-inch) mountain.
- 75-millimeter (2.92-inch) field guns.
- 155-millimeter (6.1-inch) rapid-fire Remailho gun.

The following artillery, considered as obsolete at outbreak of war, was put in action as soon as possible after the superiority of the German heavy artillery was demonstrated:

Old material:

- 120-millimeter (4.73-inch) long and short gun.
- 155-millimeter (6.107-inch) long and short gun.
- 220-millimeter (8.66-inch) mortar.
- 270-millimeter (10.66-inch) mortar.

About one month before the outbreak of war, 6 regiments of 105-millimeter (4.14-inch) guns were authorized, but the guns were not ready for issue at the outbreak of the war. Since the outbreak of war these regiments have been furnished with the 105-millimeter (4.14-inch) guns, and the following other calibers have been introduced:

- 150-millimeter (6-inch) Schneider rapid-fire howitzers.
- 260-millimeter (10.5-inch) howitzers.
- 305-millimeter (12-inch) navy gun, mounted on railway carriage.
- 340-millimeter (13.8-inch) navy gun, mounted on railway carriage.

The French have been making a new 370-millimeter (14.6-inch) mortar. Six or eight have been completed and are to be sent into the field immediately. This piece was under study when the war broke out, and is comparatively simple in construction; the trials have given most satisfactory results.

The 75-millimeter field gun is now seldom used by the French in bombarding field entrenchments.

**STUDY ON
EDUCATIONAL INSTITUTIONS GIVING MILITARY
TRAINING AS A SOURCE FOR A SUPPLY OF
OFFICERS FOR A NATIONAL ARMY**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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SCHOOLS AND COLLEGES AS A SOURCE FOR THE SUPPLY OF OFFICERS FOR A NATIONAL ARMY.

1. The organization of any fighting force, after its framework has been determined, must be supplemented by providing an efficient, sure, and continuous supply of material for trained officers.

The present war in Europe gives a graphic picture of the effects of this deficiency in the difficulties experienced by the British in the western, and the Russians in the eastern, theater of operations, in assuring either a proper degree of training for the troops at the front or of providing them with capable leaders. The proof is conclusive that in our day and generation such a defect may spell irreparable disaster.

2. The history of the organization of the Federal Armies at the beginning of the Civil War supplies us with an even more striking example than the one above of a total lack of military preparedness in providing, at the outbreak of war, a sufficiency of trained officers. This deficiency alone explains to a considerable degree the lack of decisive results for the Union Armies before 1863. With these evident defects in our system, brought before us through bitter experience, we should not fail to organize our resources of dependable personnel and insure a continuous flow of an ample supply of trained officers, from well-known and established reservoirs. In no other way can we provide enough officers for the Regular Army, the Regular Army Reserve, and the Volunteers on mobilization, or later replace the wastage incident to war.

3. The laws now on the statute books provide the following sources for officers for the Regular Army:

(a) *United States Military Academy*.—Number at present graduated yearly, more than sufficient to fill all vacancies occurring.

(b) *Selected enlisted men*.—None have been appointed for two years on account of the lack of vacancies.

(c) *Selected graduates of colleges at which officers are detailed as professors of military science and tactics*.—None have been appointed lately, as there have been no vacancies.

(d) *Other civilians*.—There will be no shortage of officers for the Regular Army so long as its strength does not exceed 100,000 and its organization remains as it stands to-day. The number of

graduates can always be increased by reenacting the present law authorizing the appointment and entrance of a cadet's successor one year before he is graduated. This is now effective until 1923, having been extended by the Act of Congress approved March 4, 1915.

4. With an increase in strength in the Regular Army, the organization of the Regular Army Reserve, the need for providing reserve officers for the Regular Army, for reserve units, and for instructors with the second line army and educational institutions, the following sources offer means for solving this problem:

(a) *The United States Military Academy*.—To be enlarged.

(b) *Selected enlisted men*.—This number will be limited and no data exist upon which we can estimate the number which we can obtain.

(c) *Ex-volunteer officers and National Guard officers*.—It is impossible to estimate the number of officers who can be obtained from the first class mentioned, for the reason that some time has elapsed since these officers left the military service, and they have undoubtedly not continued their training during the interim. This number, of course, will be limited.

There will be a number of National Guard officers who will make good officers, but it is impossible to form an estimate of the total number which can be obtained. There is no doubt, however, that there are many who will be glad to come into the reserve units and thus assure themselves of the opportunity for future service at the front.

(d) *Graduates of colleges and universities, at which there is a standard course of instruction, and at which an officer of the Army is detailed for the purpose of giving military instruction*.—The following is the number of students who have been under military instruction, and graduated from institutions having military departments, in the past 10 years:

	Students under military instruction.	Military students graduated.		Students under military instruction.	Military students. graduated.
1905.....	17,835	2,441	1911.....	28,843	4,700
1906.....	18,138	2,890	1912.....	29,979	4,757
1907.....	21,616	3,073	1913 ¹	30,872	5,153
1908.....	24,101	3,441	1914 ¹	31,911	4,970
1909.....	25,222	3,789	1915 ¹	32,313	5,200
1910.....	27,122	4,215			

¹ About 1,100 of these are now listed as suitable for commissions

Only a small percentage of the total number graduated, 44,529, will be "trained officers," as the words are understood to-day, but all will have pursued a course, both practical and theoretical, insuring a working knowledge of rudiments. Since 1912 the training

has become more intensive, and 1,100 out of 15,323 have been recommended for commissions in the Regular Army and Volunteer forces. Previous to 1912 nearly all have, no doubt, lost all touch with things military, and have consequently forgotten what little they learned before their graduation.

The possibilities may be better understood when it is realized that 44,529 students have been graduated from the military departments of these institutions since 1905. If close cooperation between the War Department and authorities of these institutions had been the rule and not the exception prior to 1912, a much greater proportion of graduate military students would now be available. Notwithstanding the fact that a complete standardization of the military course has not yet been effected, the authorities of a majority of colleges are, nevertheless, sufficiently interested to agree to practically the same course for their institutions. They do not all agree as to time to be devoted to the course, but the subjects studied and the practical field work accomplished are to all intents and purposes identical.

5. In this connection it is thought best to give a short description of the institutions under consideration and to explain their classification.

Broadly speaking, all educational institutions have been considered as divided into two general classes—the university and college, and the preparatory type. The selection of officers should, as a rule, be made from institutions of the university and college type. We will thus obtain a more mature and better educated man, more capable of fulfilling the functions of an officer.

The military schools—for example, Culver Military Academy, Indiana; St. John's, Manlius, N. Y.—are of the preparatory type, and their output as a rule is too young and immature to make the best officers. Exceptions to this rule will be found when the emergency exists, and there will be no trouble in deciding the different cases as they arise.

Among the university and college type are a number of institutions known as military colleges. For example, St. John's College, Annapolis, Md.; the South Carolina Military Academy, Charleston, S. C.; the Agricultural and Mechanical College of Texas; Norwich University, Northfield, Vt.; and the Virginia Military Institute, Lexington, Va.

In these colleges the student is continually in uniform and throughout the entire day subject to military discipline. The academic curriculum is that of a college, the graduate usually receiving a B. S. or M. E. upon graduation. His training has been patterned largely upon that of the West Point cadet, and the material coming from

these colleges could supplement, in a very simple and easy way, the material coming from the United States Military Academy.

The patriotic endeavors of these institutions should be recognized and selected graduates, without examination other than physical, be appointed annually to fill vacancies in the Regular Army not taken by the graduates from the Military Academy and by selected enlisted men. At present each of these institutions, by the authority of the President, can select one man each year for appointment, under the above-mentioned conditions, to the Regular Army. This number should be increased to 10 annually, and in this way foster the pride and efficiency of these useful institutions.

6. The appointment of officers of the Army as professors of military science and tactics at the several institutions and the issue of equipment is regulated by the provisions of section 1225, Revised Statutes. This is quoted at length, as it is the basis of all subsequent legislation relating to the relations existing between the War Department and these institutions:

SEC. 1225. The President may, upon the application of any established military institute, seminary or academy, college or university, within the United States, having capacity to educate at the same time not less than one hundred and fifty male students, detail an officer of the Army or Navy to act as superintendent or professor thereof; but the number of officers so detailed shall not exceed fifty from the Army and ten from the Navy, being a maximum of sixty at any time, and they shall be apportioned throughout the United States, first, to those State institutions applying for such detail that are required to provide instruction in military tactics under the provisions of the act of Congress of July second, eighteen hundred and sixty-two, donating lands for the establishment of colleges where the leading object shall be the practical instruction of the industrial classes in agriculture and the mechanic arts, including military tactics; and after that said details to be distributed, as nearly as may be practicable, according to population. The Secretary of War is authorized to issue, at his discretion and under proper regulations to be prescribed by him, out of ordnance and ordnance stores belonging to the Government and which can be spared for that purpose, such number of the same as may appear to be required for military instruction and practice by the students of any college or university under the provisions of this section, and the Secretary shall require a bond in each case, in double the value of the property, for the care and safe-keeping thereof, and for the return of the same when required: *Provided*, That nothing in this act shall be so construed as to prevent the detail of officers of the Engineer Corps of the Navy as professors in scientific schools or colleges as now provided by act of Congress approved February twenty-sixth, eighteen hundred and seventy-nine, entitled "An act to promote a knowledge of steam engineering and iron shipbuilding among the students of scientific schools or colleges in the United States"; and the Secretary of War is hereby authorized to issue ordnance and ordnance stores belonging to the Government on the terms and conditions hereinbefore provided to any college or university at which a retired officer of the Army may be assigned as provided by section twelve hundred and sixty of the Revised Statutes.

The main points of dispute between the War Department and the authorities of the institutions are:

(a) The indifference of the constituted authorities to the military department and a misunderstanding of the benefits which may be obtained by carrying out this training, as indicated by the law. This is ordinarily shown by the wholesale excusing of students from this work because of athletics, etc.

(b) By not providing sufficient funds for the upkeep of the military department to insure its efficiency.

(c) By failing to allot proper time and opportunity for the work of the department when getting up the college schedule.

(d) By minimizing the importance of the military and by placing agriculture and mechanic arts in competition with the military department.

The evident intent of the original act is shown by providing for "the establishment of colleges where the leading object shall be the practical instruction of the industrial classes in agriculture and the mechanic arts, *including military tactics*."

The military department being coequal with the two other departments, it should receive due consideration from the authorities of the institution.

7. Having appointed a professor of military science and tactics and issued arms and equipment, the most economical and practical results from the evident requirement of the law for compulsory instruction would be obtained if the same standard requirements were prescribed for all. The original minimum requirements laid down by the War Department were agreed to by the land-grant colleges after consultation with the late Chief of Staff, Gen. W. W. Wotherspoon, who, as head of the Army War College, represented the War Department in this conference. The minimum requirement was for 3 hours of instruction per week or what was equivalent to 84 hours for the academic year. While many schools give much more time than the minimum required and have endeavored to cooperate with the War Department in a whole-hearted manner, there still remain many whose action in this respect appears to be little more than a mere acquiescence in the requirements of the law and which have practically reduced their instruction in the department to a standard which can not produce efficiency. The minimum has been found to be insufficient and no results can be assured.

8. The reports of numerous college inspection boards since a standard was laid down show that instruction has not been wholly satisfactory, and all point to the fact that centralized control is necessary before we can count on proper standardization. This will also enable us to be assured that the aid extended by the Federal

Government under the original Morrill Act (July 2, 1862) is being properly and equitably divided.

If graduates are to be employed as reserve officers and assigned for duty to the reserve of officers for the Regular Army, for the reserve units, and finally for any volunteer forces (Federal forces only), it seems only logical that their training should be safeguarded under direction of the Secretary of War. We can depend on the college doing its part in the young man's academic training, but his military training should be assured by legalized cooperation between the college authorities and the War Department.

9. At the present time instruction at our colleges and universities has been gradually brought to a stage at which practically all colleges are turning out men who have received instruction in infantry-drill regulations, theoretical and practical; field-service regulations; small-arms firing regulations; minor-troop leading; and field engineering to a limited extent.

It is believed, however, that the following subjects, both theoretical and practical, ought to be prescribed for all collegiate institutions:

Infantry Drill Regulations (theoretical and practical): School of the soldier; School of the squad; School of the company; School of the battalion.

Manual of Guard Duty.

Field Service Regulations: Service of information; Service of security; Marches; Shelter; Orders.

Tables of Organization, to include the regiment (Infantry, Cavalry, and Field Artillery).

Small-Arms Firing Regulations: Theoretical principles; Estimating distances; Known distance and combat practice.

Military Law (Manual of Courts-Martial).

Topography: Map reading; Road and position sketching.

Troop Leading.

Military Policy and Military History.

Company Administration.

Military Hygiene.

Field Engineering.

This course will insure the student being grounded in the rudiments by the time he graduates. Upon graduation those who desire to adopt the military profession as a career can be selected for appointment in the Regular Army after passing the prescribed tests, while those who desire to become reserve officers should be required to undergo six months' training with Regular Army units.

10. The adoption of this plan will require the president of the institution and the professor of military science and tactics to report upon the student at the end of his second year's work. This is suggested in order that the student may have at least two years' training common to all branches before deciding whether or not he will adopt a particular branch of the service in which to serve as a reserve officer.

There will be many who, at the end of the compulsory course, do not care to take up either of these propositions, and for this last reason it has been suggested that military scholarships be provided. This is the recommendation made by the Association of Military Colleges and Schools, and also by the association of Land Grant and State Colleges.

They have based their suggestion upon the fact that there should be some monetary consideration offered these young men before asking them to obligate themselves to serve as reserve officers. There is thought to be merit in this proposition, and due consideration ought to be given to suggestions coming from men who have spent their lives in educating the youth of the country; this is especially so, as all of the institutions represented in the association are essentially military institutions.

11. The introduction in Congress of the measure known as the McKellar bill caused a widespread discussion among the school authorities. The land-grant institutions were generally hostile to the measure, as it provided for a new agency in each State, and they feared that it might reduce the patronage and hence attendance at the State institutions. The military colleges and schools did not care for the bill, as it was taken as a suggestion that these institutions were not maintained as potential military academies, and hence the Government interest might be transferred to the new agency. The War Department approved certain features of the bill, as it provided for central control under direction of the Secretary of War, and the future of an officers' reserve corps was assured by the obligatory feature of service for all students. Unfortunately, the academic standard for the student was not assured by the bill, and this one feature, should the measure become a law, would probably affect all academic standards required by the War Department for entrance into the Regular Army or reserve officers' corps.

For the reasons given above it is believed that no new agencies should be established, but that every effort should be made to legalize the instruction and method of training at the agencies now required by law to maintain compulsory military training.

This subject is most important. Every effort should be made to foster these agencies and provide for legalized cooperation between them and the War Department. Under our present-day conditions they are thought to be unequalled as a dependable source for officers. In no other way than through our military colleges and land-grant institutions, with military departments, can we so efficiently and economically obtain the large number of officers needed in times of great emergency.

12. A plan has been proposed for attaching cadet organizations, recruited from educational institutions, to units of the Regular Army for purposes of instruction, making the unit a training school for officers.

To provide for this plan authority of law is necessary, together with an appropriation to pay the expense involved. Such a plan is neither practicable nor advisable for the following reasons:

(a) It would have to be carried out during the summer vacation at which time the cadet organizations do not exist. At this time most of the students go to their homes, where many of them have to work in order to help pay their expenses for the coming year.

(b) It would be a waste of time to try to train large numbers of students who had shown no special aptitude and who could never be used as officers. The present system of military instruction at educational institutions tries to give all students as much instruction as possible with a view to the selection at the end of the course of those who have shown the most aptitude. The proficient ones are then listed as being available for future service as reserve officers. If these could be given additional instruction with the Regular Army they would be made into excellent officers. In this manner several thousand reserve officers could be trained each year and they would be the best available material in the country.

The correct policy would be to educate selected cadets in order to fit them for duty as reserve officers rather than to train units. Many young men trained under the proposed system would never be efficient as officers, and full value would never be received for the time and money expended in training them. These selected young men who have shown special aptitude along military lines during their college course and who are recommended by the professor of military science and tactics should be given opportunity to receive, in addition, such instruction as would enable them to qualify as reserve officers. This training could very well be given by attaching them to units of the Regular Army and allowing them to receive additional instruction, such as is ordinarily given to junior officers. Most of them would be willing to give up time for this purpose if some inducement were given them in the way of paying their expenses and guaranteeing their appointment as reserve officers after having been trained.

From experience gained at the annual inspections of civil educational institutions, it is known that the students will not take kindly to the suggested plan, and to force this feature will undoubtedly lessen their interest in military training. In addition, probable objections on the part of parents must be expected and carefully weighed.

As stated above, the plan of attaching cadet units to units of the Regular Army is not believed to be feasible. The plan suggested in its place is believed to be sound and workable.

13. Several new features have lately been suggested with respect to possible assistance from the Federal Government to institutions and to students who have obligated themselves to serve after graduation as reserve officers, or with the continental army units. These, briefly, are:

(a) The payment to each institution of a yearly per capita allowance of \$10 for every "proficient" cadet in senior divisions, and a yearly per capita allowance of \$5 for every "proficient" cadet in junior divisions of the Reserve Officers' Training Corps, the proficiency in each case to be determined by regulations issued by the Secretary of War.

The fund thus accumulated to be used by the institution solely for expenditures connected with the military work, especially field work, of the unit. The specific items for which these funds can be expended would be determined by the Secretary of War.

It has been further suggested that additional allowances be granted for other stages of proficiency attained by members of the corps, and the regulations governing the conditions imposed will be issued by the Secretary of War.

This resembles the system now in vogue in Great Britain for the members of her university and college contingents of the English officers' training corps.

(b) The granting of an annual allowance of \$100 to each member of the reserve officers' training corps who has been certified to as being proficient after his first year's work and who has obligated himself to serve at least 10 years after his successful graduation from the institution.

There are a number of good features contained in each of these propositions, but nothing should be granted along these lines which does not require the individual to obligate himself for future service, nor until he has had at least two years' military training in the institution.

14. Considering the before-mentioned facts, the following steps in a logical sequence must be taken to insure efficient instruction:

(a) The establishment of a reserve officers' corps. The draft of this proposed law has been already adopted and recommended by the War College Division of the General Staff.

(b) The organization of a reserve officers' training corps to which all existing cadet organizations should belong. The benefit resulting from the creation of the corps will be in part psychological and the esprit of the students will be raised. This has already been approved by the Secretary of War.

STUDY ON ELIMINATION OF UNNECESSARY EXPENSE FROM ARMY ADMINISTRATION

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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ELIMINATION OF UNNECESSARY EXPENSE FROM ARMY ADMINISTRATION.

1. In Section VIII of a memorandum to the Chief of Staff, dated September 3, 1915, the Secretary of War directed that a "study be made by the General Staff of the possibility of eliminating any unnecessary item of expense." To make clear the character and scope of the study desired by him, the Secretary quoted from a memorandum of instructions issued by him, under date of April 29, 1915, the substance of which is as follows:

* * * * *

In order to enable me to obtain proper knowledge and to be wisely guided, I must have a painstaking, thorough, impartial, and concentrated investigation of this subject matter. Each considerable item of expenditure must be studied with a view of reaching an impartial conclusion as to whether the thing for which it is expended is necessary; whether in the handling of the money our administrative methods are proper and economical; and whether we are receiving the proper return for the money expended.

* * * * *

Certain items of expenditure need not be considered with any view of being able to lessen them, because they are, by their nature, fixed; and the only thing to be considered with respect to them would be the administrative methods through which the money was expended, and a consideration of whether those methods were more expensive than necessary. * * * I mean by this that certain great items need only be cursorily considered, because it is not my intention to attempt economy by recommending a reduction in them, unless the reduction is one that has to do with the administration of the sum as contrasted with the thing for which expended.

All other items than such as would be properly comprehended within those just mentioned, I desire to have looked into, with the character of attention above described and for the purpose above set forth.

2. In a message to Congress under date of March 3, 1911, the President stated:

* * * Estimates of departmental needs have not been the object of thorough analysis and review before submission; budgets of receipts and disbursements have been prepared and presented for consideration of Congress in an unscientific and unsystematic manner; appropriation bills have been without uniformity or common principle governing them; there have been practically no accounts showing what the Government owns, and only a partial representation of what it owes; *appropriations have been overencumbered without the facts being known*; officers of Government have had no regular or systematic method of having brought to their attention the cost of Government administration, operation, and maintenance, and therefore could not judge as to the

economy or waste. There has been inadequate means whereby those who served with fidelity and efficiency might make a record of accomplishment and be distinguished from those who were inefficient and wasteful; functions and establishments have been duplicated, even multiplied, causing conflict and unnecessary expense; lack of full information has made intelligent direction impossible and cooperation between different branches of the service difficult.

The statements contained in this message of the President were based upon a preliminary general investigation and resulted in the appropriation by Congress of funds to enable the President to continue the investigation, and to start the construction work of correcting the defects disclosed, in so far as that could be done by executive action.

3. A special commission known as the President's Commission on Economy and Efficiency, commonly referred to as the Cleveland Commission, was appointed, with Dr. Frederick A. Cleveland, a distinguished economist, as its chairman.

4. After 21 months of continuous labor and the expenditure of a total of \$230,000, the President, in a special message to Congress, dated January 8, 1913, asked for the appropriation of an additional \$250,000 to provide for the continuation of the work, which he characterized as only begun. The Cleveland Commission is merely typical of others which have been previously appointed. As the result of their investigations much valuable information has been acquired, but constructive work of correcting the defects disclosed has been curiously lacking.

5. The foregoing facts are cited as indicating the magnitude and character of the investigation necessary to ascertain the data desired by the Secretary of War. It is apparent that many months must elapse before the data essential to a proper analysis can be gathered and put into budgetary form, which must be done before items can be studied by themselves and in their relationship to other items.

6. House of Representatives Document No. 854, Sixty-second Congress, second session, publishes a report of the President's Commission on Economy and Efficiency, entitled "The Need for a National Budget." A study of this document leads convincingly to the conclusion that the budgetary form of presenting fiscal data is the only means by which either the national or a departmental executive may be apprised of the nature and purpose of past and proposed expenditures, and so be enabled to intelligently judge of their necessity.

7. The conclusions arrived at by the Economy and Efficiency Committee concerning departmental methods of transacting business are summed up in a report dated December 18, 1912, which, for the reason that funds were not available for continuing the work, unfortunately proved to be the final report. The opinion expressed is to the effect that public business is carried on "at a very high

cost"; that methods of accounting in all departments are such that data are not readily available; and that a proper balance between economy of expenditure and efficiency of operation can only be maintained by "building up a *permanent* organization" as a constructing and responsible agency "continuously at work."

8. Discontinuous investigations may disclose unnecessary past expenditures. They can not insure against current or future waste in a different quarter. The fundamental step in the "elimination of unnecessary expense" is, therefore, the organization of a permanent agency to carry on continuous investigation.

9. So far as the War Department is concerned, Congress provided by the act approved February 14, 1903, a permanent agency equipped with all the legal powers necessary to properly supervise expenditures. Full advantage has never been taken of this, however, to set the economic side of this machinery in motion by the exercise of executive action. Each disbursing agency within the War Department continues to operate independently of the others; and although the sanction of law exists, a *continuous* investigation of the economic side of handling funds and the corresponding constructive work of balancing economy against efficiency by the annual preparation of a budget has never been instituted.

10. A presumption is thus created, strong enough to warrant assuming it to be true, that wastage still occurs regardless of the excellence of the business methods of each individual disbursing agency.

11. As the initial and only step possible at the present time looking toward the elimination of unnecessary expense, a division or continuing committee of the General Staff Corps should be empowered and instructed to pursue a continuous investigation of this subject; and should be made the responsible agency for the preparation of an annual budget in such form as will make possible a more comprehensive supervision over the estimates than can now be exercised.

12. When this has been accomplished the preparation of full detailed information will become a matter of routine, and constructive work may anticipate instead of follow expenditures. The need for intermittent investigations will disappear and a full understanding of past, present, and proposed operations, together with the incidental expense attached thereto, will become possible.

FINANCES AND COSTS OF THE PRESENT EUROPEAN WAR

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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FINANCES AND COSTS OF THE PRESENT EUROPEAN WAR.

INTRODUCTION.

A careful search of the files of the War College has been made for data covering the various points of the study. The results are embodied in the following pages. As was to have been expected, accurate data are almost wholly lacking, and such as have been secured are of doubtful accuracy. The various warring nations are naturally not publishing information on this subject at this time, and the majority of the figures quoted in the following pages are little better than estimates.

1. POLICY EMPLOYED IN FINANCING THE WAR.

(a) *Great Britain*.—Prior to the outbreak of hostilities Great Britain had made no plans for putting the country upon a sound financial basis for war. The Imperial Government was as unprepared to meet the financial emergency caused by the war as it was to oppose the trained armies of central Europe with an adequate number of properly trained and equipped troops. Since the beginning of hostilities England has endeavored to meet the situation by laying heavy taxes on imports, "war profits," incomes, spirits, tea, etc., and in some cases the taxes on incomes have amounted to 33 per cent. The increased income derived from these sources has, of course, proven utterly inadequate to provide the huge sums necessary for the maintenance of the Government and the prosecution of the war. Great Britain has therefore been obliged to borrow extensively, and according to the best available information the amount she has obtained in this way at home since the beginning of the war is approximately \$5,489,000,000. Her foreign war loans aggregate approximately \$250,000,000.

England has joined with France and Russia in providing a fund of \$200,000,000 for meeting in part the war expenses of Belgium, Japan, and Serbia, and in addition it is believed has loaned Belgium \$50,000,000 and Serbia \$4,000,000 without interest until the end of the war.

(b) *France*.—The outbreak of hostilities in August, 1914, found France well prepared financially to enter the war. For some years

prior thereto France, like Germany and Russia, had been building up a war reserve which, when war came, enabled her to put her well-trained and equipped armies into the field with the assurance that for a time at least there was no fear of a lack of funds for the prosecution of the war. However, it soon became apparent that France, like all other nations involved in the war, must resort to borrowing to meet the enormous expenses of the situation. Since the war began France has borrowed at home approximately \$1,680,000,000. A portion of this sum was obtained directly from the French people, who subscribed liberally to what was known as National-Defense Bonds, which ran for from 6 to 12 months and bore interest at 5 per cent. A later domestic loan which made up the total sum borrowed at home was floated through the Bank of France in the form of bonds for a term of years and bearing interest at 5 per cent. Later, in order to secure gold for purchases abroad, the Government called upon the people to exchange bullion for paper currency and even to turn into the treasury gold ornaments, jewelry, etc. The response to these requests was most patriotic.

France has also joined with England in negotiating in the United States a loan of \$500,000,000 at 5 per cent, and has contributed to a fund of \$200,000,000 to meet in part the war expenses of Belgium, Japan, and Serbia. Her other foreign loans aggregate \$148,000,000, and are shown in more detail under (b) Table 4.

(c) *Russia*.—Russia had accumulated a large war reserve at the outbreak of hostilities. Part of this reserve which was on deposit in Berlin was withdrawn during the week preceding the war. The increased expenses due to the war are being met by increasing the rates of taxes already in force and by borrowing. So far as known, Russia since the beginning of the war has made three domestic loans aggregating about \$1,339,000,000. She has also joined with England and France in providing a fund of \$200,000,000 to meet in part the war expenses of Belgium, Japan, and Serbia.

(d) *Italy*.—No data are available respecting the financial policy of Italy or the measures so far adopted to meet war conditions. She has borrowed about \$425,000,000.

(e) *Belgium*.—Nothing is known of the policy of Belgium with respect to financing the war except that she has been aided by Great Britain, France, and Russia, as already stated. She has, however, been aided by Great Britain by a loan of \$50,000,000 without interest.

(f) *Serbia*.—Same as for Belgium. Great Britain has loaned Serbia \$4,000,000 without interest.

(g) *Japan*.—No data available.

(h) *Germany*.—The following abstract of a description of the German method of financing the present war, by Roland G. Usher,

in the December, 1914, issue of the *Atlantic Monthly*, is given as the best and clearest exposition of the subject yet available:

Great sums of ready money have invariably been needed in Anglo-Saxon countries in order to begin a war, because those countries have invariably been caught unprepared. The Government has lacked not only the necessary materials, but the knowledge of their whereabouts, and has had to find them by ordinary business methods, which meant buying them in open market with money. England and the United States have always obtained in the same way the supplies and munitions needed to prosecute war and have always found an abundant supply of stable currency the indispensable nexus between the Government and its citizens by whom the commodities were produced.

German statesmen and financiers have, however, arrived at an entirely different solution of the question. The German system of "financing" war depends upon the following:

The army requires *material* for its use and maintenance as does the nation at large, and steps were taken in time of peace to insure the supply of this material upon the outbreak and continuance of war.

Certain supplies Germany did not and could not produce and those supplies were purchased and stored in quantity before the outbreak of war. The vast supplies necessary at the outbreak of war and before their manufacture could be increased were also purchased and stored.

Certain other supplies Germany did not produce in normal times or did not produce them in the quantity sufficient for prosecuting war. These supplies could be produced, however, if adequate preparation were made therefor in advance.

Supplies of both the above classes would be necessary not only for the use of the army, but for the nation at large as well.

In order to gather the class of supplies which she could not produce at any time, capital was necessary with which to purchase them. Capital was also necessary for the purpose of subsidizing manufactures for the supply of materials which would be needed in increased quantities in time of war and which required special machinery and skilled labor for their production. To secure this capital Germany imposed before the outbreak of war a "war levy," which was a direct tax, amounting to \$250,000,000, which, they explained, was necessary to render the army efficient. With the capital thus obtained she "purchased in Germany and abroad every conceivable sort of supplies necessary to put the nation in position necessary to make war."

As Germany employs the system of universal military service, she can tell just what men will be called away from their usual pursuits upon the outbreak of war. She knew in advance, therefore, just what men would have to be replaced by individuals not to be called to the colors in order to provide for the supply of commodities neces-

sary during war. She therefore subsidized manufactures in order to enable them to place in the factories the machinery which would be required during war and to train enough additional labor for operating the machinery—the additional laborers to consist of individuals who were not to be called to the colors.

In this manner Germany prepared in peace for the supplies she would need in war.

Money in time of war, as at any other time, the Germans concluded, meant currency, and currency meant some medium of exchange which would be accepted by the people at face value. So long as the public confidence in the Government was unshaken and ultimate success was believed certain, a paper currency would serve the purpose much better than specie. The banking system, to be sure, collected gold as assiduously as it could during the months preceding the war and is supposed to have vastly increased the German gold reserve, which was to give stability to the paper currency and furnish a firm basis for such international exchange as they might eventually find necessary. The central banking system, however, * * * could absolutely control all exchange, could accept as collateral for loans whatever the individual had to offer and issue him paper credits. There would be plenty of real value because there would be plenty of real work; the Government would see to that.

The banks would make loans to the manufacturer and establish a checking account on which they would pay him paper, which in time he would pay his employees, who would pay it out for commodities. The dealers would pay it back into the banks, when the whole transaction would, as usual, be canceled.

In this way Germany is attempting to avoid the necessity for borrowing the vast sums from neutral countries which the other warring nations are apparently going to have to do.

The bond issues which she has made are not concerned with the war itself so much as with the necessary readjustments after the war is over.

As observers we are not yet in a position to pass upon the ultimate validity of these measures. We can only point out that they seem to conform accurately to the experience of history and to be nothing more than the literal application of the simple postulates of political economy. So far as we can tell, if private letters are any evidence of what conditions in Germany at present are, every indication points toward the overwhelming success of German finance.

(i) *Austria-Hungary*.—No data are available concerning the plans of the Government of Austria-Hungary for financing the war. It is known that she has borrowed money and that her first loan was made quietly through the banks, but the amount so obtained and the rate of interest paid are not definitely known. Her total domestic loans amount to \$1,181,000,000. No further data concerning the financial transactions of Austria-Hungary are available.

(k) *Turkey*.—It is reported that Turkey has received material financial aid from Germany in the form of a loan of \$250,000,000. No other data concerning the financial policy and transactions of Turkey are available.

2. COST OF THE WAR.

In so far as this can be ascertained, it is shown by Tables 1 and 2 appended, Table 1 giving what is known of the total cost to date and Table 2 the daily cost at the periods stated. These figures are only estimates, of course, and, as it is generally conceded that the war is becoming increasingly costly, are probably far below the actual amounts at this time.

3. NUMBER AND AMOUNT OF DOMESTIC LOANS.

The number and amount of domestic loans, in so far as they can be ascertained, are shown in Table 3. It must be understood that the information on this subject comes from various newspapers and that its accuracy can not be vouched for.

4. NUMBER AND AMOUNT OF FOREIGN LOANS.

This information is contained in Table 4. With the exception of the Anglo-French loan made in the United States, the same remarks as to the validity of the information applies here as in the case of domestic loans.

5. A TABLE SHOWING TOTAL AND PER CAPITA NATIONAL WEALTH OF VARIOUS NATIONS AT THE BEGINNING OF THE WAR; ALSO NATIONAL DEBTS IN 1914 AND ESTIMATED AMOUNTS IN 1916.

TABLE 1.—*Cost of the war.*

(a) *Great Britain*.—\$3,525,000,000 for one year only. (Collier's Weekly, Nov. 6-15, p. 11.)

NOTE.—To this amount should be added some portion of \$200,000,000 furnished to Belgium, Serbia, and Japan jointly by Great Britain, Russia, and France.

(b) *France*.—\$1,750,000,000 for period April 1, 1915, to August 1, 1915. (Review of Reviews, April, 1915, p. 452.)

NOTE.—To this amount should be added some portion of \$200,000,000 furnished to Belgium, Serbia, and Japan by Great Britain, Russia, and France.

(c) *Russia*.—\$2,000,000,000 for period April 1, 1915, to August 1, 1915. (Review of Reviews, April, 1915, p. 452.)

NOTE.—To this amount should be added some portion of \$200,000,000 furnished to Belgium, Serbia, and Japan by Great Britain, Russia, and France.

(d) *Italy*.—\$300,000,000 for period April 1, 1915, to August 1, 1915. (Review of Reviews, April, 1915, p. 452.)

(e) *Belgium*.—No data.

(f) *Serbia*.—No data.

(g) *Japan*.—No data.

(h) *Germany*.—\$2,500,000,000 (includes Turkey's expenditures) for period April 1, 1915, to August 1, 1915. (Review of Reviews, April, 1915, p. 452.)

(i) *Austria-Hungary*.—\$1,500,000,000 for period April 1, 1915, to August 1, 1915. (Review of Reviews, April, 1915, p. 452.)

(k) *Turkey*.—See Germany.

TABLE 2.—*Daily cost of the war.*

(a) *Great Britain*.—\$14,100,000 (Collier's Weekly, Nov. 6, 1915, p. 11). Present time.

(b) *France*.—\$7,000,000 (Literary Digest, Dec. 5, 1914, p. 1151). During August, September, and October, 1914.

(c) *Russia*.—No data.

(d) *Italy*.—No data.

(e) *Belgium*.—No data.

(f) *Serbia*.—No data.

(g) *Japan*.—No data.

(h) *Germany*.—\$5,000,000 to \$7,000,000 (Literary Digest, Dec. 5, 1914, p. 1152). Prior to December, 1914.

(i) *Austria-Hungary*.—No data.

(k) *Turkey*.—No data.

TABLE 3.—*Domestic loans.*

[Except when otherwise noted, the figures for this table were taken from the Literary Digest, Nov. 20, 1915, p. 1198, quoting New York Times Annalist.]

(a) *Great Britain*.—

Bonds 3½ per cent (10 to 13 years sold at 95)-----	\$1,750,000,000
Bonds 4½ per cent-----	2,925,000,000
Five-year exchequer 3s-----	239,000,000
Treasury bills (2¼ per cent to 3¾ per cent), six months (estimated as now outstanding)-----	575,000,000

NOTE.—When the 4½ per cent loan was made the rate of interest on all preceding loans was voluntarily raised to 4½ per cent, with the promise that if further loans at higher rates of interest became necessary all prior loans should bear such higher rates.

(b) *France*.—

Bonds, national defense, 5 per cent (6 to 12 months)-----	\$1,230,000,000
Bonds, Treasury, 5 per cent (a term of years)-----	450,000,000

(c) *Russia*.—

Bonds 5 per cent-----	\$515,000,000
Bonds 5½ per cent-----	515,000,000
Bonds 4 per cent-----	309,000,000
Treasury bills at home and in England and France-----	1,252,000,000

(d) *Italy*.—

Bonds 5½ per cent-----	\$200,000,000
Bonds 4½ per cent-----	200,000,000

(e) *Belgium*.—No data available.

(f) *Serbia*.—No data available.

(g) *Japan*.—No data available.

(h) *Germany*.—

First war loan 5's	\$1, 115, 000, 000
Second war loan 5's	2, 265, 000, 000
Third war loan 5's	3, 025, 000, 000

(i) *Austria-Hungary*.—

Austrian bonds 5½ per cent	\$433, 000, 000
Hungarian bonds 6 per cent	237, 000, 000
War loans, credits, etc	1, 161, 000, 000

(k) *Turkey*.—No data available.TABLE 4.—*Foreign loans*.

[Except when otherwise noted, the figures for this table were taken from the Literary Digest, Nov. 20, 1915, p. 1198, quoting New York Times Annalist.]

(a) *Great Britain*.—

One-half of Anglo-French credit in New York 5 per cent bonds	\$250, 000, 000
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(b) *France*.—

One-year 5 per cent notes in London	\$50, 000, 000
One-year 5 per cent notes in New York	25, 000, 000
Credits and collateral loan in New York	73, 000, 000
One-half Anglo-French loan in New York	250, 000, 000

(c) *Russia*.—See "Treasury bills," etc., under (c) *Russia*, table 3.(d) *Italy*.—Loan now being placed in New York, \$25,000,000.(e) *Belgium*.—\$50,000,000 loaned by British Government during the war without interest.(f) *Serbia*.—\$4,000,000 loaned by British Government during the war without interest.(g) *Japan*.—No data available.(h) *Germany*.—

Notes in United States	\$10, 000, 000
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(i) *Austria-Hungary*.—No data available.(k) *Turkey*.—

Loan in Germany	\$250, 000, 000
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TABLE 5.

	National wealth at beginning of war.	Per capita wealth at beginning of war.		National wealth at beginning of war.	Per capita wealth at beginning of war.
(a) Great Britain	\$85, 000, 000, 000	\$1, 777	(g) Japan ¹		
(b) France	50, 000, 000, 000	1, 625	(h) Germany	\$80, 000, 000, 000	\$923
(c) Russia	40, 000, 000, 000	250	(i) Austria-Hungary	25, 000, 000, 000	500
(d) Italy	20, 000, 000, 000	588	(k) Turkey	3, 000, 000, 000	(?)
(e) Belgium	9, 000, 000, 000	(?)			
(f) Serbia	500, 000, 000	(?)			

NATIONAL DEBT.

	1914	1916		1914	1916
(a) Great Britain	\$3, 485, 000, 000	\$11, 000, 000, 000	(g) Japan ¹		
(b) France	6, 345, 000, 000	9, 500, 000, 000	(h) Germany	\$3, 735, 000, 000	\$9, 985, 000, 000
(c) Russia	4, 540, 000, 000	6, 500, 000, 000	(i) Austria-Hungary	1, 050, 000, 000	2, 000, 000, 000
(d) Italy	2, 850, 000, 000	3, 000, 000, 000	(k) Turkey	675, 000, 000	675, 000, 000
(e) Belgium	825, 000, 000	825, 000, 000			
(f) Serbia	125, 000, 000	125, 000, 000			

¹ No data available.

FORTIFICATIONS

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

WCD 4896-4

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SYNOPSIS.

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FORTIFICATIONS.

I. INTRODUCTION.

In a memorandum from the Chief of Staff dated November 15, 1915, directions were given for the preparation of a brochure upon the subject of "Fortifications," with sole reference to the present European war, giving especial attention to the following points:

(a) What influence forts and fortified cities, as distinguished from intrenched areas, have exerted on the operations on land.

(b) Influence of seacoast fortifications with particular reference to the attack of the allied fleet against the fortifications of the Dardanelles. Give in detail the total armament, with calibers of arms of the fleet as well as of the land forts, and the losses in personnel and material suffered by both fleets and forts.

(c) A brief summary of the attempt to take these forts by the operation of the mobile troops; the number of mobile troops, as near as can be determined, used to date, both in the attack and in the defense, with total losses.

This has been done as far as practicable with the data now available, and the results are noted in the following paragraphs:

1. INFLUENCE OF FORTS AND FORTIFIED CITIES, AS DISTINGUISHED FROM INTRENCHED AREAS, UPON OPERATIONS ON LAND.

FORTIFICATIONS OF LIEGE.

At the outbreak of the present European war the Germans, in their march through Belgium, were, on the evening of August 4, 1914, closing in on Liege, which lies astride the Meuse River near the eastern boundary of Belgium. The fortifications of Liege had been constructed by Brialmont, a Belgian officer, who also designed the fortifications of Namur and Antwerp. They were completed in 1892, and consisted of a circle of forts commanding the main approaches to the city and about 4 miles therefrom. There were six main forts of the pentagonal type and six smaller, triangular in shape; the greatest distance between forts was 7,000 yards, and the average less than 4,000 yards. Each fort had a garrison of about 80 men and an armament of two 6-inch guns, four 4.7-inch guns, two 8-inch mortars, and three or four quick-fire guns, the total number of guns in the 12 forts being about 400. It was intended to construct

between the forts lines of trenches and redoubts for infantry and gun pits for artillery, but this had not been done.

The fort itself consisted of a low mound of concrete or masonry, roofed with concrete and covered with earth; a deep ditch surrounded the mound, the top of the latter barely showing above the margin of the ditch. The top was pierced with circular pits, in which "cupolas" or gun turrets moved up and down. Within the mound there were quarters, machinery, stores, etc.

When the Germans appeared the Belgian mobilization was still in progress, and it is probable that the garrison, instead of being 30,000 as was intended, was only 20,000. The Germans, numbering about 30,000, concentrated the attack on the four forts at the southeast sector and opened up with field guns on the night of August 4-5. One of the forts was silenced by this fire on the 5th, and on the 6th the Germans brought up their 8.4-inch howitzers and probably some 11-inch mortars, outranging the Belgian guns. Shells are said to have gone through 12 feet of concrete. The accurate firing of the Germans showed that the forts could not long withstand, and in the afternoon of the 6th the Belgian field force was withdrawn from the city and all the forts abandoned except the northern ones. The Germans left the remaining forts in peace until the 13th, when the 11-inch mortars opened on them, and by the 15th all had been captured. The cupolas had been smashed and shells had penetrated the roofs and exploded the magazines.

FORTIFICATIONS OF NAMUR AND ALONG THE FRENCH FRONTIER.

Namur was defended by a ring of nine forts, $2\frac{1}{2}$ miles from the city, with an armament similar to that in the Liege forts. The garrison of 26,000 had prepared the defense of the intervals by intrenchments and wire entanglements, and a vigorous defense was intended, as French help was expected. The Germans brought up 32 modern siege pieces, including the 42-centimeter howitzer, its first appearance, and the Austrian 12-inch mortar, and placed them 3 miles from the Belgian lines. The attack began August 20. On the next day the Belgians had to withdraw from the advanced trenches owing to their inability to reply to the German fire; two forts fell; three others were silenced after an attack of two hours. On the 23d Namur was occupied, and on the 25th the last fort had fallen. One fort had fired only 10 times and was itself struck by 1,200 shells fired at the rate of 20 per minute. The speedy fall of Namur came near playing havoc with the allies' plans, as with the delay caused by its resistance they had intended to complete the concentration along the Belgian frontier.

Other fortified places, such as Lille, Laon, La Fere, and Rheims, along the northeastern French boundary fell before the advancing Germans without striking a blow. The advance was on such a broad front that an attempt at defense would have endangered the safety of the garrisons, and it was imperative that the garrisons join the field army. By August 28 Mauberge of all the northern strongholds alone held out. The defenses had been brought to a high state of efficiency, the intervals well prepared with an armored train running on a track encircling the main line of defenses. The German infantry invested the place August 27, but the siege guns did not go into action until September 3. The place fell September 8 with a loss of 40,000 men.

ANTWERP.

Antwerp, said to be the second most strongly fortified city of Europe, encircled by a girdle of 20 permanent forts and 12 earthen redoubts, was in similar manner quickly reduced by the heavy siege guns. The garrison, beginning to profit by the lessons learned at Liege and Namur, attempted to keep the enemy's big howitzers beyond range of the forts, but were driven back by the superior numbers of the Germans, whose siege guns were then brought up and quickly demolished the masonry forts. Thus the garrison was deprived of any further assistance from its larger guns and, being but poorly entrenched and unable to withstand the overwhelming artillery fire, was forced back to the inner line, thereby permitting the siege guns to come within range of the city, which had therefore to be abandoned promptly in order to prevent its destruction by bombardment.

VERDUN.

Verdun, however, on the eastern French frontier, with a ring of forts 5 miles from the city, is still in the hands of the French, because with a field army employing earthworks the fortified zone has been largely extended and the German howitzers have been kept 6 miles from the forts. The unfortified city of Nancy has withstood several heavy attacks, being protected by a field army on the hills forming the "Grand Crown."

PRZEMYSL AND THE RUSSIAN FORTIFICATIONS.

The Russians invested the fortress of Przemyśl on September 22, 1914, but later the siege was raised and on November 12 it was invested a second time. As the Russians had no heavy siege guns, the siege resulted in an attempt to starve out the garrison, which suc-

ceeded March 22, 1915. With the return of the Teutonic allies in May, 20 days was sufficient to recapture the place. The Russians stated that their ammunition supply was low, but it is safe to assume that the presence of the heavy siege guns with the Germans had a great deal to do with the recapture.

The fortresses guarding Warsaw and the Russian frontier on the west were quickly taken during the advance of the Teutonic allies in the summer of 1915, either by maneuvering the defenders out of them or by bringing up the heavy guns and shattering the fortifications, as at Novo Georgievsk. The fortress of Ossowetz on the line Niemen-Bohr-Narew had a different history. In February, 1915, the Russians fell back across the Bohr River to the protection of Ossowetz, which stood on the east bank along a long ridge covered with woods, affording good artillery positions, and commanding the opposite bank, where artillery positions were poor. There were extensive marshes along the river, but at this time of the year they were frozen. The Germans at first tried to turn the position, but failing, brought up their heavy mortars, even the 42-centimeter howitzer. The Russian batteries were so well concealed that the Germans could not locate them and their big guns did no damage. The Russians silenced several batteries without suffering from their fire. As the warm weather advanced, the marshes made it difficult to emplace the heavy guns. Ossowetz did not fall until August 22 in the general Russian retreat after the capture of Warsaw.

THE FORTIFIED CITY OF THE FUTURE.

The failure of the forts in the present war is due to several causes:

First. Being built some years before the war, their position was accurately known to the enemy, thus losing the advantage of concealment; also, the details of their construction leaked out and guns were especially designed to destroy them.

Second. Their armament had not been kept up to date and was entirely overpowered by guns of recent construction and of a type unknown to the defense.

Third. The garrisons permitted the enemy to emplace his guns within their effective range, but beyond range of the forts' guns.

The favorable effect of concealment, as a defensive measure, is illustrated by the operations against Ossowetz, and that of keeping the enemy at a distance by the operations against Verdun.

The experiences of this war confirm the conclusion reached during the siege of Port Arthur in 1904, "that the mounting of large-caliber guns in a fort for use against the siege guns of the enemy is a fatal

error." It would therefore seem preferable to place the fixed heavy guns in emplacements located in rear of the line of forts, depending for protection upon concealment rather than masonry or other cover. The forts themselves, whether permanent or improvised after the outbreak of war, should be designed for an infantry garrison only, and the main line of defense should consist of a continuous system of infantry entrenchments (including machine-gun emplacements), located in advance of the line of forts. These latter would serve mainly as supporting points for organizing a counter attack in case the front were penetrated.

To check the enemy's advance before his heaviest guns have reached points within effective range of the city, naval base, or other vital object to be protected, a garrison sufficiently strong to operate well in advance of the forts, is indispensable, and its action should be assisted by long-range fire from the fixed armament, which should be superior in caliber and range to the guns usually supplied to an army in the field.

The guns of the fortress, both fixed and mobile, should be distributed over a large area and advantage taken of the terrain to secure concealment, which must be had at any price. It is important to bear in mind that the number of guns permanently emplaced should be comparatively small compared with the total heavy armament of the fortress, or, in other words, the main reliance will be placed on the mobile guns, some of which should be at least as powerful as any the enemy can bring against them.

The fortress of the future should consist of a large area so organized as to insure extreme mobility both to troops and guns. There will be no conspicuous forts of masonry and armor. Permanent gun emplacements should be constructed only at important points with the primary intention of compelling the enemy to lose time in bringing up his heaviest siege guns. The mobile guns would be located in earthen emplacements well concealed from the enemy's observers who might endeavor to direct fire on them. The point to be emphasized is that unless the garrison be strong enough in both mobile troops and mobile guns to keep the enemy from breaking through the line or coming within effective range of the city proper or other vital point or object to be protected, then there is no hope of offering a prolonged resistance.

In view of the foregoing it is apparent that intrenched areas with mobile troops and guns are a more dependable protection than a stereotyped system of permanent forts.

2. INFLUENCE OF SEACOAST FORTIFICATIONS, WITH PARTICULAR REFERENCE TO THE ATTACK BY ALLIED FLEET ON DARDANELLES FORTIFICATIONS.

DESCRIPTION OF THE DARDANELLES.

The western approach to the city of Constantinople from the Aegean Sea is through the Dardanelles and the Sea of Marmora. The Dardanelles (ancient Hellespont) is a long winding channel, 47 miles in length, but the really narrow portion, extending from the Aegean Sea to the town of Gallipoli, represents a sea passage of about 33 miles. The passage is at no point wider than 7,000 yards, and at one point, the Narrows, 14 miles from the entrance, it contracts to 1,400 yards. The surface current flows westward into the Aegean at an average speed of $1\frac{1}{2}$ knots, which is sometimes trebled in the Narrows after strong northerly winds. The depth in mid-channel varies from 25 to 55 fathoms, and there are shallows at some of the bays in the wider sections. Owing to the narrowness, the strong current, and the cross currents set up at some of the bays, maneuvering of large vessels is difficult. The weather is treacherous and uncertain; the prevailing winds for nine months of the year are northeasterly, but south winds spring up quickly, and blows last from three to five days. Unfavorable weather and frequent haze and mist were encountered during the earlier stages of the naval operations.

The long narrow tongue of land to the north is the Gallipoli Peninsula. It has its greatest width, 12 miles, just above the Narrows or opposite Suvla Bay; it is narrowest at Bulair, 3 miles; at the Narrows the width is 5 miles. Ships can therefore lie in the Gulf of Saros and fire across the peninsula. The Asiatic shore of the Dardanelles is lower than the European. The hills are low and wooded, while on the peninsula they are bare and rocky cliffs. On both shores there are heights which give advantage to defensive artillery and at the Narrows both shores tower above the ships.

FORTIFICATIONS OF THE DARDANELLES.

The original fortifications were the "Dardanelles Castles"; the two inner, the "Old Castles," at the Narrows, were built by the Sultan Mohammed II, the conqueror of Constantinople, in 1462; the two at the entrance, the "New Castles," were built in 1659. At the instigation of Great Britain new fortifications were built in the Narrows between 1864 and 1877. After the peace of San Stefano in 1878 the Germans designed new fortifications and all the new fortifications were armed with Krupp guns.

From the best obtainable information, in the spring of 1915 the armament was as follows: At the entrance between the towns of Seddel-Bahr near Cape Helles on the European side, and Kum Kale on the Asiatic side, there were four forts or batteries, two on each side, with an armament of ten 10.2-inch guns, four 9.2-inch guns, and two 6-inch guns.

Proceeding towards the Narrows, there were on the Asiatic side fortifications on Dardanes Hill, 4 miles south of the Narrows, and two forts at the Narrows near the town of Chanak—the whole mounting an armament of four 14-inch guns, six 10.2-inch guns, one 8.3-inch howitzer, and nine 6-inch guns. On the European side there were three batteries south of the town of Kilid Bahr at the Narrows, and a number of batteries on the hills around Kilid Bahr, the total armament being four 14-inch guns, one 11-inch gun, eight 10.2-inch guns, fourteen 9.2-inch guns, fifteen 8.3-inch howitzers, and twenty-four 6-inch guns. The armament between the entrance and the Narrows thus amounted to eight 14-inch guns, one 11-inch gun, fourteen 10.2-inch guns, fourteen 9.2-inch guns, fourteen 8.3-inch howitzers, and thirty-three 6-inch guns.

The fortifications extended 4 miles farther north to the line through Nagara, beyond which the Dardanelles turns to the north-east and broadens out. The armament on both sides amounted to two 14-inch guns, five 10.2-inch guns, five 9.2-inch guns, eight 8.3-inch howitzers, and fifteen 6-inch guns, all except six 6-inch guns being on the Asiatic side.

In addition to the above there were smaller guns to protect mine fields.

From an examination of the chart, it seems that a hostile fleet, after silencing the guns at the entrance and proceeding towards the Narrows, would be subject to the fire of the following guns when it had reached a point 4 miles from the Narrows: ten 14-inch guns, eighteen 10.2-inch guns, eight 9.2-inch guns, twenty-one 8.3-inch howitzers, and thirty-seven 6-inch guns.

(a) Power of the guns:

The guns in the batteries vary greatly; alongside old guns are guns of very great power. The heaviest gun, of which there were 10, the 14-inch Krupp, with a projectile weighing 1,365 pounds, appears superior to our 14-inch seacoast gun with its 1,600-pound projectile, as it has a reported penetration in Krupp hardened steel armor at 8,000 meters of 20 inches, while our gun has 16.3 inches. Its life, however, is limited to 80 or 90 rounds, and hence it is probably not as accurate as ours after firing a number of shots.

The next heaviest gun is the 11-inch, but there was only one of that caliber. Then comes the 10.2-inch, of which there were 29, a

gun manufactured some years ago by the Krupps. It is not as powerful as our 10-inch gun; its projectile weighs 450 pounds, as against our 575 pounds, and its penetration at 3,000 meters is 6 inches, while our gun penetrates 9.3 inches at 8,000 meters. The other heavy-caliber gun is 9.2 inches, of which there were 25, with a projectile weighing 420 pounds, and still more inferior to our 10-inch gun.

It is believed that Krupp guns of later pattern were mounted after the outbreak of hostilities in 1914, and it seems to be certain that heavy mobile howitzers or mortars were used against the allies.

(b) Character of the batteries:

The batteries were built with great care, but groups were formed of different calibers and types, which rendered serving them difficult and slow in action. The emplacements are of concrete and steel with earthen cover, with guns in embrasures rather than in turrets. There was a modern system of searchlights, telephones, and range finders, and good communication by roads. They were generally invisible from the sea, but their positions were detected by the stone barracks, which were usually close behind them and in full view of passing ships.

One of the batteries was manned entirely by Germans, but the others had Turkish crews that had been drilled by German officers. The movable howitzer batteries appeared to have had German coast artillerymen with German naval officers in command.

REDUCTION OF THE FORTS AT THE ENTRANCE.

On November 3, 1914, the allied fleet bombarded the forts at the entrance, but the real operations began February 19, 1915, with a fleet of British battleships and cruisers, aided by a strong French squadron. The attack was at first at long range, to which the forts could not reply, being outranged. In the afternoon the ships closed in and opened fire with the secondary batteries; the forts returned the fire. The forts on the European side were apparently silenced; one on the Asiatic side continued firing. The damage was subsequently found to be comparatively small and many of the guns were still intact. Eight battleships were engaged with a total of 46 guns of major caliber, 30 being 12-inch, and 58 guns of minor caliber from 7.5-inch to 4-inch. The shore guns were ten 10.2-inch, six 9.2-inch, and two 6-inch. No ship was hit. In general the guns were mounted in open works near the old masonry castles, with the sea faces protected by earth.

Action against these forts continued until February 25, when the reduction of all four was completed. In the meantime the new battleship, the *Queen Elizabeth*, with eight 15-inch guns and twelve 6-inch guns, had arrived, giving the allies 16 armored ships of

the line, 12 British and 4 French. The British casualties had been three killed and five wounded. Landing parties had been sent ashore as quickly as possible to complete the work of destruction, but were driven back by the Turks before completing the job. It was reported by the British that all forts were completely demolished with the exception of one at Kum Kale.

OPERATIONS AGAINST THE FORTS AT THE NARROWS.

Sweeping operations to clear the channel of mines and obstructions began February 25, and on March 1 three ships entered the strait and attacked Fort Dardanes with its five 6-inch guns in rectangular turrets on the military crest of a hill 350 feet high; these were said to be the only Turkish guns with telescopic sights. Sweeping operations and the attack on Fort Dardanes with its outlying smaller batteries continued until March 5, the French division and the *Queen Elizabeth* using indirect fire from the Gulf of Saros on the forts at Kilid Bahr at the Narrows. An aeroplane ship with sea planes and aeroplanes accompanied the fleet. But not a shot hit the forts during the indirect bombardment; according to the Turks, the aeroplanes did not remain long enough in the air to direct the fire. On March 8 the *Queen Elizabeth* entered the strait and fired on Kilid Bahr at 21,000 yards range. This long-range bombardment of the forts at the Narrows and closer action by the other ships against the batteries south of the Narrows, together with mine sweeping, continued until March 18. The ships were hit several times, including the *Queen Elizabeth*, which was struck by field guns, but no material damage was done and the casualties were slight. Fort Dardanes and other concealed batteries near by were almost daily under the fire of from four or five ships, sixteen 12-inch guns and forty-eight 6-inch guns being used against five 6-inch guns. No battery on the Turkish side was put permanently out of action. The Turkish casualties, omitting those in the forts at the entrance, which were heavy, were 23 killed and 10 wounded.

FINAL ATTACK OF MARCH 18.

On March 18 there was a general attack on the Narrows, participated in by 12 British and 4 French ships, mounting a total of 82 major caliber guns from 15-inch to 9.2-inch, and 178 minor caliber guns from 7.5-inch to 4-inch. As stated in paragraph 2, subparagraph 2, "Fortifications of the Dardanelles," pages 4 and 5, the number of guns that the Turks could bring into action against this fleet was 36 major caliber direct-fire guns and 21 howitzers, a total of 57, and 37 minor caliber guns. In addition there were fieldpieces

and movable heavy howitzers, the number being indeterminate. In the forenoon the *Queen Elizabeth*, just inside the entrance, 10½ miles from the Narrows, and three older British ships bombarded the forts at the Narrows, while two other British ships at closer range attacked Dardanes and the batteries south of the Narrows. Shortly after noon the French division of four ships advanced to the support of these two ships, taking up a position near Kephez Point, 3 miles south of the Narrows. A heavy fire was now returned by the forts, but as the ships were maneuvering in circles, few hits were made. The 10 ships that were engaged at this time mounted 58 major caliber guns. At 1.25 p. m. the forts ceased firing. A fresh British squadron of six ships now arrived to relieve a corresponding number of ships well within the strait. As this squadron neared Kephez Point, the other ships turned to withdraw when the French ship, *Bouvet*, was struck several times and blew up, the cause of the explosion probably being a drifting mine. The new squadron continued the advance, attacking in line; the ships just within the entrance continued the bombardment, but it was manifest that the forts had not been silenced. Mine sweeping operations continued, but drifting mines sunk the British ships *Irresistible* and *Ocean*, and a mine and gunfire so badly damaged the *Inflexible* that it with difficulty reached the harbor of Mudros, 40 miles away. The French ship *Gaulois* was also badly damaged by gunfire. The attack ceased when darkness fell.

The attack had been badly repulsed and was not again renewed. The British casualties were slight, 61 all told, practically all the crew from the *Irresistible* and *Ocean* being saved; but the French lost nearly the entire crew of the *Bouvet*. The Turks lost 23 killed and 60 wounded. The 6-inch guns in the turrets at Dardanes, which had received such a heavy fire, were not damaged; the turrets were hit only three times. On the European side three 10-inch guns were put out of action, but three weeks later all were ready again. The stone barracks in rear of the batteries were destroyed; 86 shells fell in a space 300 feet deep in rear of one battery, but the battery was untouched. The shells easily penetrated earth, but not one passed through sand parapets. After March 18, the Turks substituted sand for earth to a large degree in the parapets and divided up the large interior rooms of the batteries into smaller ones by hollow walls filled with sand.

EFFICIENCY OF SEACOAST FORTIFICATIONS.

The operations in the Dardanelles have been the only instance in this war of a naval attack on seacoast fortifications, except the minor attack of the Japanese Navy against the German fortifications at Tsingtau. Elsewhere, by virtue of their existence, they have per-

formed their functions of protecting harbors, fleets, and naval bases. The German fleet, under the protection of the shore guns, has maintained its existence in spite of the proximity of the superior British fleet.

These operations have emphasized the fact that has been thoroughly demonstrated by history that a purely naval attack can not succeed against seacoast fortifications adequately armed and manned, and that in such actions the proper function of the navy is to convoy the army, which will make the attack by land, and to protect its line of communications.

REQUISITES FOR SUCCESSFUL DEFENSE.

The forts at the entrance fell and those in the Narrows were scarcely damaged, though in both cases there was an overwhelming fire from the ships. The difference in the two cases is this: At the entrance the guns were outranged and the ships had plenty of sea room in which to maneuver and bring the heavy guns to bear, free from danger of mines; in the narrow mined channel of the Narrows, with both shores lined with guns, some of them equal or nearly so to the heaviest ship gun, the ships had to come within range and could attack with only a portion of the force. In such a position, a fleet, exposed to fixed and floating mines, shore torpedoes and submarines, will fail. The slight damage sustained by the shore batteries is illustrated by Fort Dardanes, which withstood the fire from the British ships, admittedly inferior to none in marksmanship. An interior city, with its approach channel protected with well-placed and concealed guns, equal in range to the enemy's, and provided with the accessory means of defense, need not fear capture by bombardment or a run by the forts. A fort on the seacoast proper, exposed to the fire from ships at sea, must have guns of greater range than the ships' guns; otherwise the ships could silence the guns on shore at their pleasure, and under their fire could land troops to complete the destruction of the forts.

Concealment and dispersion are also necessary. The aeroplane observation of fire by the allies does not seem to have been very efficient, but this can not always be relied on, and concealment from aerial observation should be obtained. Without such observation, long-range indirect bombardment is worthless. By taking advantage of the terrain and resorting to dispersion, the amount of concrete might be reduced, and the money thus saved put into more guns.

NECESSITY FOR MOBILE TROOPS.

The power of coast fortifications, to repel a direct attack by an enemy fleet, is limited to the area within range of their guns, but their influence is extended considerably further whenever they cover

a base from which submarines operate. These fortifications must therefore be recognized as of supreme importance within the scope of their proper functions, and this is especially true of a country possessing an enormous frontage on two oceans. Their paramount value is that they relieve the navy of the local defense of important harbors or other strategic points and thus release our seagoing fleet for operations against the enemy on the high seas, and furnish a refuge for it in the face of overpowering odds. But beyond the sphere of influence of our seacoast forts, enemy ships may approach the shore with impunity and, under the cover of their guns, may land troops that can then proceed against the important places defended by the forts or even against the forts themselves, since they are vulnerable from the land side. With our long coast lines, the guarding of every possible landing place by seacoast fortifications is out of the question, and, although the development and employment of heavy mobile seacoast armament along our coastal railroads will further restrict the landing places open to an enemy, there will still remain many places affording facilities for landing operations which can only be opposed by mobile troops acting without the cooperation of Coast Artillery. For these reasons it is evident that there must also be available a mobile force properly trained, organized and equipped, to send against the enemy at the landing and defeat them there, or at least prevent his advance toward his objective, should a landing be effected. Until we have adequately provided for this dual defense of our coasts, having full regard to both fixed defenses and mobile troops, our Navy will never be free to perform its primary function, but will be frittered away in response to clamor for protection from our coast population.

An illustration of the value of mobile troops in coast defense is afforded by the operations at the Dardanelles, described in the last subhead under paragraph 3, page 12, of this study.

3. SUMMARY OF ATTEMPT TO TAKE DARDANELLES FORTIFICATIONS BY MOBILE TROOPS.

INITIAL DELAY.

Before the attack of March 18 it had been decided to undertake operations by land at the Dardanelles. An official French note stated on the 12th that a force was on its way to the Levant, and Gen. Iam Hamilton was appointed commander of the British force and arrived in time to witness the action of the 18th. Both the French and British forces had arrived in the harbor of Mudros on the island of Lemnos, west of the Dardanelles; but as the British transports had not been loaded with a view to make a landing in force on a hostile shore and the lack of facilities in Mudros made

redistribution impossible there, they had to be sent back to Alexandria for reloading. A month was lost, which it is safe to say was well employed by the Turks.

TERRAIN.

The Gallipoli Peninsula is covered by hills which rise to a height of 1,000 feet; on the southern end Achi Baba, 600 feet high, dominates the end of the peninsula; just west of the Narrows, Kilid Bahr, 700 feet high, covers the forts from an attack from the Aegean; and northwest of the Narrows, Sari Bair Mountain reaches a height of 970 feet. These hills must be taken before an advance can be made to the shores of the Narrows. The hills do not run in a regular or well-defined direction, and between the hills there are a confusing number of valleys. The area is practically roadless and most of it covered with prickly scrub. The sides of the hills are almost vertical. At the water's edge there is generally a narrow beach with a steep bank 10 feet high, and then the rolling hills with their crests 1,000 yards from the beach. Every trail leading to the beach was covered with one or more machine guns in screened pits, and the roads were covered with field guns in groups of from three to six.

STRENGTH OF FORCES.

The British force consisted of the Twenty-ninth (Regular) Division, the East Lancashire (Territorial) Division, a naval division of bluejackets and marines, some Indian troops, and the Australian and New Zealand Corps, with 20 battalions of infantry, together with artillery and engineers. The strength was approximately 100,000. The territorials and colonial troops had been wintering in Egypt. The French force was about 35,000. The Turks were in greater force and better posted than was expected; the number on the European side has been given as over 150,000. Besides, they were supported by the Germans.

ALLIES' PLAN.

The coast being precipitous, landing places few, and trenches and entanglements being visible on shipboard at most of them, Gen. Hamilton decided to throw the whole of his troops very rapidly ashore at a number of places, and selected five beaches at the tip of the peninsula and two on the west coast, near Sari Bair Mountain, as landing places. He could thus advance up the peninsula or cross it where it was about five miles wide, and obtaining possession of the high hills, secure observation points whereby the navy could assist in the reduction of the forts.

LANDINGS AT SOUTH END OF PENINSULA.

April 25 was the date of the landing. The Twenty-ninth Division, 20,000 men, was to land at the end of the peninsula at the five beaches, the three at the tip, near Sedd-el-Bahr, being the main ones. At the other two places, the landing was to take place at dawn, while at the main places the landings were to be simultaneously at 5.30 a. m., after half an hour's bombardment by the fleet. The landing parties, covering the advance of the division, were placed on naval vessels the previous day and before dawn on the 25th were in the small boats in which they were to be towed ashore. The accompanying squadron of four battleships and four cruisers began the preliminary bombardment. At S beach, in Morto Bay, the farthest to the east, three companies (750 men) made a successful landing, with a loss of 50 men, and kept the position. On Y beach, the westernmost landing, two battalions (2,000 men) landed on an undefended beach, but were subsequently attacked and driven to the boats with heavy losses. On X beach, 3 miles south of Y beach, 1 battalion (1,000 men) made a successful landing, under cover of the fire of the *Implacable*, which stood close inshore, firing with every possible gun, thus preparing the way for a subsequent force of 2,000 men, which joined hands with the force landing at W beach, the next to the south. On W beach, 1 battalion (1,000 men) landed on a beach 350 yards long and 15 to 40 yards wide, well protected with intrenchments and entanglements, the latter extending under water. The Turks reserved their fire until the first boat-load of soldiers grounded, and under this fire the assailants had to make their way through the entanglement. A foothold was gained and, more infantry following, connection was made with X beach. At V beach, west of Sedd-el-Bahr, the site of the seacoast forts that had previously been reduced by the navy, a force of about 3,000 attempted to land on a beach 350 yards long by 10 yards wide, overlooked by a natural amphitheater rising back from the beach, with concave slopes. On the very margin of the beach ran a wire entanglement and up the slopes were two other lines, the whole covered with fire of rifles, machine guns, and pom-poms. Three companies (750 men), landing in small boats, were almost annihilated, the survivors obtaining shelter under the lee of a low sandy bank 4 feet high, at the inner edge of the beach; the boat crews were all killed. It was intended to land 2,000 men from a collier, the *Clyde*, which was to be run ashore, and lighters used to form a gangway between ship and shore. The attempt failed; of 1,000 men who left the colliers, 50 per cent were killed or wounded. Nothing could be done until night, when the remainder of the infantry from the *Clyde* went ashore. On the 26th, under cover of the fire from the

ships, the troops established themselves on the crests of the surrounding hills. During the night of the 25th, the disembarkation of the remainder of the Twenty-ninth Division was proceeding on W and X beaches.

LANDING BY THE AUSTRALIAN-NEW ZEALAND CORPS.

This corps of 35,000 men landed north of Gaba Tepe, near the foot of Sari Bair Mountain. This rugged and difficult part of the coast was chosen because it was believed it would be undefended. The landing was to be a surprise and the preliminary bombardment was omitted. The covering force of 4,000 men in ships' boats was towed by destroyers to within 500 yards from the beach, which was 1,000 yards long, when the destroyers dropped behind and steam launches towed the boats in. In the darkness the boats were close to the shore before they were discovered. About a battalion of Turks disputed the landing, but they were driven back. The main body came up in the transports and by 2 p. m. 12,000 men and two batteries of mountain artillery were ashore. The Turks promptly rallied and reinforced to 20,000 by 11 a. m., made counter attacks. These counter attacks continued for several days, but with the assistance of the ships' fire the British maintained their position. On this first day—April 25—29,000 men were landed.

DIVERSION BY THE FRENCH.

As a diversion to draw the fire of the Asiatic guns from Sedd-el-Bahr, a regiment of the French corps landed at Kum Kale on the Asiatic shore on the 25th, but on the 26th they reembarked, after a loss of 754, one-fourth of its effective strength, and the French corps began landing at V Beach.

ATTEMPTS TO ADVANCE.

On April 28 the allies held a line across the peninsula, three miles north of Sedd-el-Bahr, and an attempt was made to capture the hill of Achi Baba, which failed. The troops landing on the west coast also tried to advance, but were held to a semicircle 1,100 yards in diameter from the beach. Here they were holding open a door to the vital point of the Turkish position and were keeping 24,000 of the best Turkish troops out of the main action around Sedd-el-Bahr. By May 5 the landing of the allies was completed. The British official report gives the losses among the British at this time as 602 officers and 13,377 men, which is about 13.5 per cent of the total estimated force of 100,000. It is estimated that the Turks lost 18,000 in the operations of April 25-27.

May 5 a general advance was attempted against the town of Krithia and the hill of Achi Baba, but the attack was unsuccessful. May 18 the Turks, estimated at 30,000, attacked the force at Anzac Cove (the name given to the landing place of the Australian-New Zealand Corps, themselves termed "Anzacs"), and were repulsed with a loss of 7,000, the Anzacs losing 500. To May 31 the British losses were 38,636 (1,722 being officers), the French about 5,000, and the Turkish estimated at 60,000. The total battle losses of the British in the three years of the Boer War were 38,156. According to a Turkish report at this date the number of British and French troops amounted to 90,000. The Turks had received 60,000 reinforcements.

June 4 there was another general attack by the allies from Sedd-el-Bahr; on the right there were two French divisions, the rest of the line, 4,000 yards, being held by 24,000 British infantry. The net result was a gain of 200 to 400 yards along a front of three miles. The line then held extended from south of Krithia southeast across the peninsula, about 4 miles from Sedd-el-Bahr. The appearance of German submarines caused the withdrawal to Mudros Harbor of the transports and the sending of supplies in small boats. The Turks under Enver Pasha made a general attack in the vicinity of Krithia June 30-July 2, but accomplished little, with a loss of 5,150 killed and 15,000 wounded. To July 18, the British losses were 49,283, 2,144 being officers.

LANDING AT SUVLA BAY AND SUBSEQUENT OPERATIONS.

August 7 another landing was made at Suvla Bay, 4 miles north of Anzac Cove. The landing began at 2 a. m. on three beaches and by day a force of two divisions was firmly established. The Anzac force joined in the attack, the intention being to connect the two forces and capture the Sari Bair Ridge. The attack from Anzac was carried to the summit of the ridge, but as the Turks had been heavily reinforced, the attack from Suvla Bay did not make the expected progress, and the line had to fall back. The two forces were finally joined on a line 12 miles long. The number of men landing at Suvla Bay is not known; the British speak of it as a fresh army and the Turks estimated it as 70,000. The British losses were heavy; according to the Turks, 30,000.

According to a German estimate, on August 30 the allies had from 20,000 to 25,000 troops at Sedd-el-Bahr, of whom 9,000 were French, all that was left of the original 35,000; 9,000 at Anzac Cove, and 70,000 at Suvla Bay. These numbers were not materially increased after that date, though the losses in the trench warfare since then had brought the casualties on November 9 to 106,610 among the British. The Turkish losses are unknown. On December 20 it was

announced that the troops at Suvla Bay and Anzac Cove, about 100,000, had been withdrawn from the peninsula for service elsewhere; the troops at Sedd-el-Bahr were left there until January 9, 1916, when they, too, were withdrawn.

NECESSITY FOR HEAVY MOBILE GUNS.

Although the Turks had ample warning of the impending attack, with an abundance of men to draw upon, and had guarded the most probable landing places with intrenchments and entanglements, the allies succeeded in getting ashore. With the limited number of beaches suitable for landing, the Turks apparently had sufficient force to guard every one; but some were overlooked and the success of the allies is due partly to that fact. The main reason for the success, though, is due to the fire of the covering ships, which could come in close enough to use all their guns and thus keep down the fire of the Turks. If the Turks had employed guns heavy enough to stand the ships off, the landing would not have taken place, for experience has shown that even the most powerful naval guns at long range are unable to put well concealed shore guns out of action. Even chance hits have little effect upon the sand or earthen parapets.

It may be accepted then as a fact, that to prevent a hostile force from landing there must be in addition to the usual infantry defense at all the possible landings, guns of sufficient power to keep the naval vessels at such a distance that their secondary batteries can not be used. Thus the landing of troops or supplies from ships at so great a distance from the shore can readily be prevented by the infantry and field guns.

In the case of a landing on our coast, the stretch to be covered is so long that it is impracticable to implace in prepared positions enough of these guns to cover all the possible landing places. It will therefore be necessary to use mobile guns that can be quickly transported to the point threatened. The quickest method of transportation appears to be a railroad paralleling the beach, from which spurs could be run to points near enough to the front to keep ships at about 8,000 yards from the shore. The railroad, spur tracks, and gun locations should be prepared in time of peace.

THE VALUE OF MOBILE TROOPS IN COAST DEFENSE.

After the allies had succeeded in the landing operations and had assembled on the peninsula the entire expeditionary force, their further advance was small, and after maintaining a position near the water's edge for over nine months, the force was withdrawn. The reason for the failure appears to be threefold: First, the size of the

Turkish force was underestimated and an insufficient number of troops was sent at first, and these troops were not sufficiently reinforced; second, the terrain was favorable to the Turks; third, most important of all, the Turks had sufficient troops to prevent the allies from advancing.

Considering our own requirements, it should be noted that the terrain along our Atlantic Coast is not so favorable to the defense as that of the Gallipoli Peninsula, as the landing beaches are numerous and extensive and the ground in rear is generally favorable for an advance. Moreover, our coast is too extended to permit the preparation of defenses in advance at all possible landing places. There is consequently the more necessity for mobile troops.

With a well-trained and equipped force equal or superior to the force that had succeeded in landing, the operations on the Gallipoli Peninsula lead us to believe that an advance from the beach away from the cover of the ships, can be prevented; but without such a force, once the outer line of defense at the beach has been penetrated, the forces must be withdrawn to some thoroughly prepared position covering the objective of the enemy. Unless such a position of suitable extent has been prepared in advance, further resistance is hopeless.

THE GENERAL STAFFS OF CERTAIN BELLIGERENT POWERS

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
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THE GENERAL STAFFS OF CERTAIN BELLIGERENT POWERS.

I. INTRODUCTION.

The object of this study is to give a concise account of the general staffs of certain belligerent powers taking part in the present European war, showing their personnel and duties under peace conditions, and also any increases or changes that have been made necessary during the progress of the present war, so far as data are at present available.

It is proposed to supplement this paper with full information as to any further changes in general staff organizations resulting from the experiences of the present war, when the necessary data have been supplied.

1. THE GENERAL STAFF OF THE AUSTRO-HUNGARIAN ARMY.

The work of the general staff of this army, 1911, included: (1) Service in the offices of the general staff; (2) with troops; (3) in special scientific military employment; and (4) for missions abroad.

"The chief of the general staff for all the armed forces" was the head of the general staff, and was under the immediate orders of the Emperor, and was also an auxiliary organ of the war minister. All work relating to operations and to preparation for the employment of the entire armed force in war was incumbent upon him. He kept in touch with the commander of the navy regarding operations of the fleet. He was assisted in his work by the "deputy chief of the general staff."

The general staff worked in seven sections.

The first section transacted personal and economic affairs and did the correspondence between the sections of the general staff and with outside quarters.

The section for operations worked at all operative affairs, the measures in connection with mobilization, plans for strategic movements, opinions and proposals regarding fortifications, organization and training of the army, regulations and instructions of a tactical and operative nature, programs for maneuvers and matters connected therewith.

The section of instruction attended to the instruction and training of general staff officers.

The topographical section was employed in the military geographical description of the monarchy and other countries.

The intelligence section collected and recorded data concerning foreign armies and fortifications.

The railway section attended to all railway and steamship matters.

The telegraph section attended to the telegraph and signal service.

The general staff attended to the war school, the Military Geographical Institute, and the war archives.

The general staff officers serving with troops performed duties corresponding to the combined duties of chiefs of staff and adjutants general in the United States Army.

The normal strength of the general staff in time of peace, 1911, was:

One general, chief of staff; 2 lieutenant field marshals—one the deputy chief of staff, the other the chief of the military geographical institute; 2 major generals—one chief of the war archives and the other the chief of the war school; 41 colonels, 77 lieutenant colonels, 85 majors, and 209 captains; total, 417. After completing studies at the war school 209 additional officers were attached to the general staff for duty and try out, with a view to their possible appointment on the general staff. In addition there were 46 other officers for clerical work on the general staff, but not with a view to being appointed members of the general staff. Total performing general-staff work, 672.

In time of war the chief of staff takes full control of military matters. According to information on file in the War College, 1914, the Austrian general staff was as follows:

One chief of staff, 1 adjutant to the chief of staff, 2 assistant chiefs of staff—one in charge of lines of communication. The part of the general staff corresponding to our War Department General Staff was divided into eight bureaus: Bureau of direction, bureau of operations, bureau of communication and supplies, bureau of instructions, bureau of monographs, bureau of evidence, bureau of transportation, bureau of telegraphy, and was charged also with the war college, war archives, and military geographical institute. The number of general-staff officers allowed by law was 508; 249 officers were assigned and 71 attached to the general staff; and 101 line officers were detailed on general-staff work, making a total of 929 officers performing general-staff work.

2. THE GENERAL STAFF OF FRANCE.

The general staff of the French Army is one of the seven main divisions of the war department. Military matters, unless they concern more than one department of the National Government, are

directed by the superior military council, which consists of the minister of war, the chief of staff, and 10 major generals. The superior military council exercises control over the general staff. One of the major generals of the superior military council is assistant chief of staff; others are assigned in time of peace to command armies in time of war, and have with them the three general-staff officers to be on their staffs in the field. These prospective army commanders have, in time of peace, supervision of the troops that would be under their command in war. They prepare and direct the maneuvers and staff rides for the training of these troops and generally see to their preparation for war. They are army inspectors.

The chief of staff is the head of the war department general staff, and deals with the larger questions. Other general-staff matters are under the assistant chief of staff. The work of the war department general staff is performed by three groups, each under a general officer.

FIRST GROUP.

1. The bureau of military operations and general training of the army.
2. The bureau charged with the study of the organization and tactics of foreign armies.
3. The bureau of railways and lines of communication.

SECOND GROUP.

1. Bureau of organization and mobilization of the army.
2. The African section.
3. The historical section.

THIRD GROUP.

1. The section of the personnel of the general staff.
2. Routine service section of the general staff.
3. The administrative section.

The chief of staff, assistant chief of staff, and the chief of the first group are major generals. The chiefs of the second and third groups are brigadier generals. In addition the following general staff officers were authorized by law before the present war: Thirty colonels, 40 lieutenant colonels, 170 majors, and 400 captains; total 640.

General staff officers were assigned as follows: War Department general staff, 132; staff with troops, 480; additional staff officers with the war department general staff, 47; with troops, 216. The general staff is larger now.

3. THE GENERAL STAFF OF GERMANY.

The general staff of Germany consists of the war department general staff (called the great general staff) and the general staff officers on duty with the troops.

The officers of the war department general staff performed, in peace, the following duties:

One general, chief of staff, directly under the Emperor, and has charge of the war academy and the land survey; 1 lieutenant general, assistant chief of staff, chief of division; 4 major generals, heads of four divisions; 11 colonels, chiefs of sections; 6 lieutenant colonels, four of them are chiefs of sections; 37 majors, duty with sections and committees; 52 captains and 1 lieutenant performing various general staff duties; total 113.

This part of the general staff is organized into 9 sections and the historical and geographical departments. It has complete charge of the mapping of the country and of the maps of Germany and other countries.

The general staff officers on duty with the troops are under the orders of their commanders, but special work may be assigned to them by the chief of staff.

Before the present war the general staff of Germany consisted of 1 general, 2 lieutenant generals, 6 major generals, 23 colonels, 21 lieutenant colonels, 116 majors, 139 captains, and 1 lieutenant, total 309. Additional officers performing general staff duties were: Three colonels, 13 lieutenant colonels, 44 majors, 36 captains, and 132 lieutenants; total attached officers 228, total number of officers performing general staff duties 537.

4. THE GENERAL STAFF OF GREAT BRITAIN.

The general staff at the war office has the following duties: To advise on the strategical distribution of the army; to supervise the education of the officers and the training and preparation of the army for war; to study military plans for offense and defense; to collect military information, and to direct the general policy in army matters.

The general staff with troops has the following duties: To assist the officers on whose staffs they serve in promoting military efficiency, and to aid them in carrying out the general policy in army matters.

The general staff at the war office, known as department of chief of general staff at army headquarters, was divided into three branches: Military operations, staff duties, and military training. A major general was in charge of each. General staff officers in this

department: Three major generals, 6 colonels, 21 lieutenant colonels and majors, and 27 captains. Total, 57.

The general staff officers with troops were: One major general, 6 brigadier generals, 16 colonels, 54 lieutenant colonels and majors, 12 captains, and 25 brigade majors. Total, 114.

Besides the 171 general staff officers other officers were attached to the general staff to perform general-staff duties.

Great Britain was short of officers, and the general staff was somewhat depleted at the beginning of the present war. The British press has attributed grave errors of the war to this lack of an adequate general staff. Influential Englishmen are advocating a general staff on the German plan.

5. THE GENERAL STAFF OF ITALY.

The latest information found at the war college shows the chief of the general staff of Italy was intrusted with the preparation, in time of peace, and execution, in time of war, of all military operations, but under the minister of war; and that the general staff consisted of 260 officers.

The war department general staff, called the great general staff, consisted of three sections: The central section, the section for military operations, and the section for railways and communications. The central section supervised the work of the others. The section for military operations was divided into five subsections, and the section for railways and communications was divided into three subsections.

The general staff officers on duty with troops performed duties that are performed in the United States by General Staff officers and by adjutants general.

6. THE GENERAL STAFF OF JAPAN.

The general staff has charge of the national defense and the employment of the military forces of the Empire. The chief of staff is directly under the Emperor and assists in the business of the imperial personal staff. All things relating to national defense and strategy are in his province. Furthermore, he has under his supervision all staff officers of the army and their training. Directly under his jurisdiction are: (1) General staff headquarters; (2) the land survey department; (3) the army staff college; and (4) the military attachés at embassies and legations.

A vice chief of staff assists the chief and supervises the business of general staff headquarters.

The subjects dealt with by the general staff are:

1. Defense of the Empire and plans of mobilization.
2. Statistics of foreign armies.
3. Communications and transportation of troops.
4. Geodesy and topography.
5. Historical work.

The work of the war department general staff, designated the great general staff, is performed in 5 divisions divided into 10 sections. One of the divisions is designated "general affairs"; the others are numbered 1, 2, 3, and 4. The chief of staff is a general; the vice chief of staff, a lieutenant general; the chief of each division is a major general, and the chief of each section is a colonel.

The general staff office at Tokyo consists of 1 general, 1 lieutenant general, 5 major generals, 10 colonels, 8 lieutenant colonels, 21 majors, and 33 captains. Total, 79. In connection with these are 72 other officers, making a total of 151 officers performing war department general staff duties May 1, 1915. They were assisted by 44 warrant and noncommissioned officers and 5 civilians. Under the chief of staff, the land survey department consists of 35 officers, 161 warrant and noncommissioned officers, and 135 civilians; the army staff college consists of 58 officers, 15 warrant and noncommissioned officers, and 14 civilians.

The exact number of general staff officers serving with troops in the Japanese Army is not stated in the reports received at the War College. It is understood that the strength, organization, and duties of the Japanese general staff are about the same as in other good, modern armies. The organization of the Japanese general staff is not fixed by law. It depends on the orders of the Emperor and usually changes slightly from year to year.

7. THE GENERAL STAFF OF RUSSIA.

The latest figures on this organization, found at the War College, show the general staff of Russia consisted of 734 officers. The general staff of that country was organized on modern lines in 1906. The chief of the general staff was part of the war ministry. In 1914 the headquarters directorate of the general staff consisted of the following six branches:

The quartermaster general's branch, consisting of seven sections; organization and administrative branch, seven sections and two subsections; mobilization branch, four sections; military communications branch, eight sections; topographical branch, three sections; aviation branch, two sections.

The Russian Army, like other modern armies, has general staff officers serving with troops.

8. THE GENERAL STAFF OF SERBIA.

In Serbia the general staff is included in the ministry of war. Part of the general staff officers serve with troops, as in the United States. The chief of staff and the assistant chief of staff had headquarters at Belgrade. The general staff is divided into three sections: (1) The operative section, divided in three parts, (*a*) personnel and matériel on campaign, (*b*) intelligence, (*c*) communications; (2) historical section, including (*a*) archives, (*b*) library; (3) geographical section, which includes four subsections, (*a*) trigonometrical, (*b*) topographical, (*c*) supplies, (*d*) mapping.

II. CONCLUSION.

In regard to our own General Staff, the act of Congress approved February 14, 1903, creating it established its status and duties on lines entirely in accord with the approved practice in European armies, and, so far as known, the experiences of the present war have proved the soundness of this action.

Actual experience, however, has shown conclusively that the personnel originally provided for our General Staff was too limited for the comprehensive duties required of it, even for our small Army. A further bar to progress was imposed by the act of Congress approved August 24, 1912, whereby the already meager personnel was reduced by one general officer and eight captains. Under the present law it consists of 2 general officers, one of whom is Chief of Staff, 4 colonels, 6 lieutenant colonels, 12 majors, and 12 captains (or first lieutenants); total, 36. In addition, the Chief of Coast Artillery and the Chief of the Division of Militia Affairs are also members of the General Staff, *ex officio*. The permanent station of these latter officers is in Washington, but the specific duties for which their offices were created to perform occupy their full attention and, properly speaking, are not duties pertaining to the General Staff any more than are those of the Chief of Engineers, Chief Signal Officer, or other bureau chiefs. As a matter of fact, they only do General Staff work when temporarily acting for the Chief of Staff and his senior assistant during the absence of those officers, and this duty is in addition to their normal functions.

At the present time the War Department General Staff consists of 2 general officers, 2 colonels, 5 lieutenant colonels, 9 majors, and 11 captains, total 29, leaving for service with troops 2 colonels, 1 lieutenant colonel, 3 majors, and 1 captain, total 7.

Because of this insufficient personnel the General Staff has been unable to undertake some of its most important functions. For example, no historical section can be established, and until this is done

the scientific military history of our various wars can not be written. Our lack of a definite military policy was largely due to the fact that we are without such histories and have consequently not learned the lessons to be derived from our own experience in war.

We can not utilize to its full extent the important information gathered abroad, because we can not assign officers to the exclusive duty of reading and digesting these reports, due to the requirements of the daily routine General Staff work pertaining to the Army, which must be first attended to.

For the same reasons we can not properly attend to the work of preparing monographs and maps pertaining to foreign countries, matters which should be always kept up to date.

One thing which prevents even our meager General Staff from rendering such efficient service as it might is the continual change of status of General Staff officers before the full detail of four years has expired. This is partly due to the fact that the present law does not provide for the retention of officers who are promoted. This defect could be remedied by providing that an officer promoted should serve out the balance of his detail in the next higher grade, the vacancy in the grade from which he was promoted not being filled until the completion of his term. This would not change the total number of officers on the General Staff detail and would greatly benefit the service by permitting continuity of work by men thoroughly trained to it.

A careful consideration of this matter shows that our War Department General Staff should consist of 94 officers of all grades, and that at the present time there should be available for service with troops not less than 27. This has been shown in detail in special studies (WCD 639-103, Nov. 15, 1915, "Reorganization of the General Staff," and WCD 9054-5, Jan. 3, 1916, "Report on the Chamberlain bill in connection with number of General Staff officers").

MILITARY AVIATION

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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MILITARY AVIATION.

I. INTRODUCTION.

1. RELATION OF AVIATION TO THE MILITARY SERVICE.

In this paper it is proposed to consider various aeronautical appliances in regard to their practical value in campaign, as shown by such data as are now available from the theater of war in Europe.

In its relation to the military service, aviation to-day may be regarded as embracing all aerial appliances, such as heavier-than-air craft, dirigibles lighter-than-air craft, and nonrigibles or captive lighter-than-air balloons, together with the personnel necessary for their operation and management.

2. USE OF AIRCRAFT ON OUR COAST AND WITH OUR MOBILE LAND FORCES.

In considering this subject account should be taken, first, of the use of aircraft of various types along and beyond the coasts and frontiers of the United States upon the outbreak of war; second, the use of aircraft in the Army by the mobile forces; third, the use of aircraft by our over-sea garrisons.

In addition to the battle fleet and units of the Navy designed to take the offensive on the high seas, the waters contiguous to the coast line of the United States are organized into naval defense districts. These cover certain sections of the coast line and contain patrol vessels, both surface and subsurface, and aircraft for reconnaissance purposes. These are essentially for the purpose of finding out and locating hostile vessels which are approaching the coast and of determining their strength, dispositions, and probable intentions.

Added to the strictly naval formations included in the naval defense districts, in time of war the United States Coast Guard (in peace under the Treasury Department) passes to the control of the Navy.

The Coast Guard, in addition to its boats and revenue cutters which will be utilized as patrol vessels, embraces the Life-Saving Service. The latter has stations more or less regularly distributed along the coasts which are connected by telephone lines. They are also equipped with visual signaling appliances to communicate from shore to ships. The Navy maintains a chain of radio stations along our coasts and over-sea possessions.

The naval defense districts become of great importance in case that the main battle fleets are defeated or in case they are operating at a great distance. Therefore, when an enemy expedition breaks through the naval defense and approaches the coast with a view to forcing a landing the resistance to such an expedition becomes primarily a function of the Army.

The defensive formations of the Army consist of the harbor defenses and accessories and the mobile units. The harbor defenses consist of fixed and mobile gun defenses and mine defenses; also obstacles both on land and in the waters. The aircraft required in connection with the harbor defenses should consist of machines used for one or more of the following purposes:

(a) For reconnaissance—that is, to determine the strength, dispositions, and probable intentions of the enemy.

(b) For preventing hostile aerial reconnaissance.

(c) For destroying hostile aircraft and for offensive work against enemy submarines and other vessels, including the interruption of enemy mining or countermining operations.

(d) For aiding in spotting the fire of Coast Artillery, both against ships and against any invading force that may invest the seacoast fortifications.

The number and character of the aircraft required depends on the locality, number of harbor defenses, their organization, strength, and positions. Each harbor-defense area, therefore, needs to be studied with this specific end in view, and should have radio apparatus not only for communicating with the Navy but also for communicating with its aircraft and with the units of our mobile forces.

In addition to the aircraft required with the harbor defenses themselves, aircraft are required with modern movable coast-defense armament employed as an auxiliary element of the mobile forces in defending the intervals between our fortified harbors and with units of the mobile forces.

The use of aircraft with the mobile units is a definite matter; each division requires one squadron of 12 aeroplanes. These are divided into three companies of four aeroplanes each, two companies having reconnaissance and artillery observation machines and one company having two high-speed machines especially constructed for long-distance reconnaissance and for combating the enemy's aerial craft; two battle machines for the purpose of bomb dropping and offensive work against enemy material of all sorts. This is in keeping with the best practice that has been developed in the European war.

3. USE OF AIRCRAFT AT OVER-SEA STATIONS.

The use of aircraft with the Army in the over-sea possessions is analogous to that mentioned above with the harbor defenses; and in

addition, wherever mobile units of the Army happen to be, they must be provided with suitable aircraft. The defense of over-sea possessions constitutes a problem in itself, and these garrisons must be equipped not only with machines capable of reconnaissance over land but also with those capable of operations over water, with the power to alight in water—that is, hydroaeroplanes.

The type of machine to be used necessarily depends on the locality: for instance, in Hawaii practically all of the military machines would need to be hydroaeroplanes; in the Philippines and Panama a great proportion of them. To the Coast Artillery troops in the United States proper and in the districts around the Great Lakes the same considerations apply. It is believed that the main principles enunciated above should be followed, and that an estimate of actual machines and material, both heavier and lighter than air, should be made for all places.

II. GENERAL TYPES OF AIRCRAFT.

4. CAPTIVE BALLOONS.

For over a century captive balloons have been used by the armies of all the leading military nations. Their function has been one of observation; that is, to see what those on the ground were unable to see. They have therefore proved a useful means of observing and reporting the effects of artillery fire. Electrical means of communication greatly enhanced the utility of captive balloons, as it made communication instantaneous from car to ground instead of by the older way of raising and lowering written messages by ropes. In clear weather and on favorable terrain captive balloons are able to distinguish different branches of the service at a distance of 16,000 yards or about 9 miles. With the best glasses at the present time the field of observation is said to extend to 20,000 yards. In general, captive balloons of the "Sausage" or "Drachen" type are used by all the armies of the great nations. Along the French-German front in northern France these balloons are used in great numbers all along the lines. Their function is to observe the fire of artillery and keep watch of all movements of hostile parties within their field of view. They are connected by telephone directly with the batteries whose fire they are observing and with the headquarters to which they are attached. In many cases the captive balloons work in conjunction with aeroplanes. The aeroplanes by flying over the terrain where the hostile targets are located find out the exact position of those which the captive balloons have been unable to locate by themselves. When by means of signals the locations of the targets have been indicated to the observer in the captive balloon, the aeroplanes proceed to other duty. Aside from the use of the captive balloons

in conjunction with aeroplanes, their duties are practically the same as they have been for many years or were in our own Civil War. Free balloons such as were used from Paris, for instance, in 1870 are now a thing of the past, their place having been taken by the aeroplane or the dirigible airship. All military captive balloons are now so constructed that their undersurface acts like a kite, thereby making them steady in a strong wind. To keep the envelope distended properly in the face of the wind, a wind sail is provided so as to transmit pressure to the rear part of the envelope by means of the wind itself. Captive balloons are used not only with the field forces, but also are especially useful in fortress warfare. The organizations which handle these balloons consist ordinarily of some 4 officers, 72 men for each balloon section.

5. DIRIGIBLES.

The term dirigible, as applied to aeronautical appliances, signifies a lighter-than-air craft, which is equipped with engines and propellers capable of moving it from place to place. Dirigibles may be roughly divided into three classes: Nonrigid, or those whose envelope can be entirely packed into a small space when deflated, and that have no rigid framework of any kind; semirigid, or those that have a stiffening for a part of their length in order to enable the envelopes to maintain their shape to better advantage than the non-rigid; the rigid, which have a framework for the whole envelope that maintains itself continuously. All have been tried for the last 15 years. The nonrigid types have not given very good results, as they are too much dependent on the weather, due to distortion of the envelopes; the semirigid have given some satisfaction and have been largely employed. The advantage of the semirigid types is that they may be packed for shipment and reassembled much more easily than the rigid types; they can be deflated quickly and, consequently, are not so subject to complete destruction as the rigid types when anchored to the earth. On the other hand, they are not able to develop the speed that the rigid types, such as the "Zeppelin," are capable of.

Dirigibles and aeroplanes are frequently compared with each other as to their utility in general. As a matter of fact, they are two entirely different military accessories and are as different in many ways as is a captive balloon from an aeroplane. Dirigibles are able to stay in the air at any height for long periods of time. They are capable of running at reduced speed, can hover over localities for minute observation and to take photographs. They are able to carry several tons weight in addition to their passengers and crew. From the fact that they are able to remain stationary over a given place

they are able to launch their projectiles with greater accuracy. Dirigibles in the present war have been used both over land and sea. At sea they have carried out reconnaissance, have acted offensively against hostile submarines, have accompanied transports in order to observe the approach of hostile craft, have been used in mine laying, stopping and examining hostile merchant vessels at sea, and for bombarding hostile localities. The airships which have made the longest trips and developed the greatest efficiency thus far are the German "Zeppelin" rigid-frame type. These have repeatedly flown over England at a distance of at least 300 miles from their base, and have nearly always returned in safety. Some have been lost, however. Aeroplanes appear to be unable to cope with them at night. While dirigibles have not proved themselves to be a determining factor in combat, either on land or sea, they are being developed to the greatest extent possible, especially by the Germans, who have dirigibles of very great size. The principal features of this type are a rigid framework of aluminum, a number of drum-shaped gas bags, and a thin outer cover. Although the details of construction are not definitely known up to date, their length is about 485 feet, their volume about 900,000 cubic feet, their total lift over 20 tons, and their useful lift about 5 tons. They are driven by four motors of a total horsepower of about 800, which is applied to four propellers. Their speed is from 50 to 60 or more miles per hour and a full-speed endurance of over 100 hours, or more than 4 days. It is therefore evident that in good weather these airships have a radius of action of from 5,000 to 6,000 miles. Moreover, they are being constantly improved, and are probably capable of crossing the Atlantic Ocean. Crews of from 10 to 20 men are required for their operation; they are armed with bombs of various sorts, light guns, and are equipped with searchlights. They carry very efficient radio apparatus, which have equipments for determining the directions from which radio impulses are being sent. In this way they are able to locate themselves at night or in foggy weather when the ground is invisible. They require very large and expensive hangars, gas plants, and equipments for their operation. When forced to make landings outside of their hangars, on account of their bulk, they are very difficult to handle in hard winds, and are liable to destruction thereby.

The best of the nonrigid and semirigid airships have a capacity of more than 800,000 cubic feet, a maximum speed of 50 miles per hour or less, and a full speed endurance of about 24 hours. As mentioned above, their great asset is extreme portability and cheapness as compared with the rigid type.

6. AEROPLANES.

Heavier-than-air craft made their appearance as military agencies in 1908, when the Wright brothers demonstrated thoroughly their possibilities in this respect. While many of the salient features of heavier-than-air machines had been worked out years before, it remained for the internal-combustion engine to really make mechanical flight possible. The military possibilities of aircraft of this description were appreciated immediately by the great nations. Large appropriations were made at once, notably by France and Germany, for their development. At first England was slow to take up the matter, but in 1912 had gone at it thoroughly and was spending large amounts of money for their development. Italy, Russia, Japan, and the smaller nations of Europe and South America made liberal appropriations for obtaining the material and developing the personnel. Aeroplanes were used in a small way during the Italian campaign in Africa during the Balkan-Turkish War, and during the Balkan War. These nations had very little equipment and very few trained flyers. Wherever the aeroplanes were given the opportunity, under average conditions they rendered efficient service in reconnaissance.

7. TYPES OF AEROPLANES.

We now find aeroplanes consisting of three principal classes: (*a*) Scout or speed machines; (*b*) reconnaissance aeroplanes; (*c*) battle machines. The first are used for distant reconnaissance and combating the enemy's aircraft, the second for ordinary reconnaissance and the observation of fire of artillery, and the third for the destruction of enemy's material, personnel, or equipment.

8. REQUIREMENTS OF VARIOUS TYPES OF MACHINES.

Great advances have been made since the war began in all these machines, all the details of which are not yet available. The following table, which appeared in the London Times of February 19, 1914, gives the approximate requirements of each type of machine at the beginning of the war. These general characteristics are still desired, but the radius of action and the speed have been considerably increased:

	Light scout.	Reconnaissance aeroplane. (a)	Reconnaissance aeroplane. (b)	Fighting aeroplane. (a)	Fighting aeroplane. (b)
Tankage to give an endurance of. To carry.....	300 miles..... Pilot only.....	300 miles..... Pilot and observer plus 80 pounds for wireless equipment. 45 to 75 miles per hour..... 7 minutes.....	200 miles..... Pilot and observer plus 80 pounds for wireless equipment. 35 to 60 miles per hour..... 10 minutes..... To land over a 30-foot vertical obstacle and pull up without a distance of 100 yards from that obstacle, the wind not being more than 15 miles per hour. A very good view essential.	200 miles..... Pilot and gunner plus 300 pounds for gun and ammunition. 45 to 65 miles per hour..... 10 minutes..... A clear field of fire in every direction up to 30° from the line of flight.	300 miles. Pilot and gunner plus 100 pounds. 45 to 75 miles per hour. 8 minutes. A clear field of fire in every direction up to 30° from the line of flight.
Range of speed..... To climb 3,500 feet in..... Miscellaneous qualities.....	50 to 85 miles per hour..... 5 minutes..... Capable of being started by the pilot single-handed.				

Instructional aeroplanes with an endurance of 150 miles will also be tested under special conditions; safety and ease of handling will be of first importance in this type.

9. AEROPLANE ENGINES.

As to material, the most important consideration in aeroplane construction has been the engine. Without excellent engines the best aeroplanes otherwise are of no service; in fact, may be a source of danger. In the countries where aeroplane development has made the most progress large prizes have been given for the development of suitable engines. At the same time, research and experimentation have gone on along this line at Government plants. Engines require frequent replacement. In fact, it is reported that after 100 hours in the air engines are "scrapped" and new ones installed. The plan found to give excellent results for the development of material is for the Government to have stations where experimentation along all lines is carried on. On the data furnished by these establishments specifications are made up for the construction of aircraft by private individuals and civil manufactories. If any parts, such as the engines mentioned above, need additional development, prizes are offered to stimulate construction and progress.

III. FUNCTIONS OF AIRCRAFT.

10. HEIGHT AT WHICH AEROPLANES MUST FLY.

It was soon found out that to escape the fire of small arms a height of about 4,000 feet above the ground had to be maintained. As soon as balloon guns were created this height had to be increased to 6,000 feet, at which height it is now necessary to fly in order to be reasonably safe from being hit by hostile projectiles sufficient to bring the machine down. At this height, 6,000 feet, small details of the terrain and small detachments of troops or material are very difficult to distinguish. On the other hand, large columns of troops, trains, railways, bridges, artillery firing, and sometimes in position, defensive positions of large extent, and things of that nature can be readily distinguished. Whenever it becomes necessary for the aircraft to fly at a lower altitude than 6,000 feet the chance of destruction by gunfire must be considered.

11. STRATEGICAL RECONNAISSANCE.

Reconnaissance of this kind is strategical in its nature, the tactical reconnaissance of particular localities is still carried out by troops or captive balloons. In fact, it may be said that all strategical reconnaissance is now carried on by aircraft. The reconnaissance is carried out by an officer who requires considerable experience in order to be able to distinguish objects on the earth and assign to them their true military value. The pilot is either an officer or noncommissioned officer. The observer is always a trained tactical officer, because in reconnaissance of this nature an untrained person can not interpret the military significance of what he sees.

12. PHOTOGRAPHY FROM AEROPLANES.

Photography is utilized to the greatest extent possible in aerial reconnaissance. The devices are so arranged that they are capable of taking one or a series of views of a particular locality. The plates or films thus made are rapidly developed and are thrown on a screen by means of a stereopticon, when all details are magnified to any extent desired and details invisible to the naked eye are brought out plainly. These details are then entered on the maps of the officers concerned. As the height at which an aeroplane is flying can be taken from the barograph, and as the focal angle of the lens of the camera is known, a scale can easily be worked out and the views form good maps of the terrain photographed.

13. AEROPLANES AND ARTILLERY.

In addition to reconnaissance in general, aeroplanes have taken their place as a fixture for observing the fire of artillery. Due to the degree of concealment which artillery is now given, it is impossible to determine its location from the ground. The aeroplanes first pick up the targets, report their location to the field artillery, and then observe the fire of the batteries. By means of prearranged visual signals or radiotelegraphy the aeroplanes are able to indicate to the artillery where their fire is making itself felt. If artillery is insufficiently provided with aeroplanes, it is well established that an enemy so provided has an overwhelming advantage.

14. CONTROL OF THE AIR.

For this reason, among others, attempts to gain "control of the air" are made by belligerents at the inception of hostilities. This takes the form of offensive action by aeroplane against aeroplane. For this purpose machines known as "speed scouts" and "battle aeroplanes" have been developed. All the great European nations are now equipped with them. The only way in which enemy aeroplanes can be effectively dealt with is by aeroplanes, because they are difficult targets for gunfire from the ground. To gain control of the air a great preponderance in number and efficiency of aircraft is necessary. So far in the European war, unless one side had a greatly preponderating number and quality of aeroplanes, they have been unable to obtain and keep control of the air. An excellent instance of obtaining control of the air seems to be furnished by the Austro-Germans when they initiated the campaign against the Russians in May, 1915. In this instance complete control of the air appears to have been obtained. The results to the Russians were disastrous because the Austro-Germans were able to fly at will wherever they wanted to, could pick up the location of the Russian

masses, and make their movements accordingly, entirely unobserved by the Russians. In the fire of their artillery they had the advantage of being able to locate the Russian guns and observe their own fire, while the Russians were powerless to do so.

In an article on "Recent progress in military aeronautics," published in the Journal of the Franklin Institute for October, 1915, Lieut. Col. Samuel Reber, Signal Corps, United States Army, sums up the question of machines for control of the air as follows:

Experience has developed three types of aeroplanes for military purposes: The first, the speed scout, for strategical reconnaissance, a one seater, with a speed up to 85 miles per hour and radius of action of 300 miles and a fast climber, about 700 feet per minute; the second for general reconnaissance purposes with the same radius of action, carrying both pilot and observer and equipped with radiotelegraphy, slower in speed, about 70 miles per hour, and climbing about 500 feet per minute, and in some cases protected by armor; the third, or fighting craft, armored, and carries in addition to the pilot a rapid-fire gun and ammunition and so arranged as to have a clear field of view and fire in either direction up to 30 degrees from the line of flight, the speed to run from 45 to 65 miles per hour, and the machine to climb about 350 feet per minute.

15. SURPRISE MOVEMENTS.

It is often said that due to the use of aeroplanes surprises are no longer possible. Generally speaking, this is so, providing both sides are equally well equipped with machines and weather conditions are favorable. If, however, complete "command of the air" is obtained by one side, the chances of surprising the enemy are greater than they have ever been before.

16. BOMB DROPPING.

In addition to their functions of reconnaissance, the observation of the fire of artillery, and the combat of hostile machines, both heavier and lighter than air, much time, thought, and ingenuity have been given to the subject of dropping projectiles. Bombs of various sorts weighing from a couple of pounds to 50 pounds have been tried. The most common ones weigh from 15 to 35 pounds. At the height at which aeroplanes are required to fly it is extremely difficult to hit an object with any certainty. Various devices have been used and tried for this purpose. The factors of height, speed, and wind, are almost impossible to compensate for entirely, up to the present time, so that consequently bomb dropping in general or the launching of projectiles of all kinds from aeroplanes has not attained great results in so far as the actual destruction of material or personnel is concerned. Advances along this line are constantly being made, however, but progress is slow. A special type of aeroplane has been developed for dropping bombs and battle purposes.

For bomb attacks on any locality these machines are sent in flotillas of from 30 to 60 machines, each of which is provided with from 5 to 10 bombs. They go to the locality and circle over it, dropping their projectiles. Against railways, roads, bridges, and hostile parks of various kinds, this method of attack has given considerable success.

IV. ORGANIZATION OF AEROPLANE UNITS.

17. TACTICS OF AEROPLANES.

As to tactical use aeroplanes seem to be approaching methods similar to those used by a navy. That is, first the speed machines reconnoiter to the front; they are followed by the battle machines, which in their turn clear the way for the reconnaissance aeroplanes; those assigned to the artillery stay right with their guns. Fortresses, harbor-defense works, and naval formations require special organizations of aeroplanes, some or all of which may be operated from the water. The organization, kind, and number of the machines and personnel required for this particular service depend on the special locality and mission of whatever formation the aircraft are to be attached to.

18. DEVELOPMENT DURING EUROPEAN WAR.

The use of aeroplanes is gradually being developed from experience in the European war. Organization has been found to be one of the most important considerations; in general the organization has been into squadrons. The squadron is a tactical and administrative unit. It has a personnel consisting of pilots, observers, bomb droppers, mechanics, chauffeurs, and drivers. Flying personnel has to be developed in the military service. Unlike chauffeurs, for instance, there are few in the civil population who can be drawn on. The few who fly are demonstrators, exhibition flyers, or sportsmen. They are very few in number and scarcely a military asset. In France the squadrons usually have six machines and two spares. They have the same organization of depots of resupply that other units of the armies possess. The squadrons usually consist of complete units of one kind of machine; that is, speed, reconnaissance, or fighting. These squadrons are usually assigned to an army, or more if the machines and personnel are available.

In general an aeroplane requires for its operation a personnel of 1 pilot, 1 observer, and 2 enlisted men, mechanics, chauffeurs, etc. In England 12 machines of different classes are assigned to a squadron.

19. ASSIGNMENT OF AEROPLANES TO ARTILLERY.

Many are of the opinion that machines with the personnel to operate them should be assigned permanently to artillery regiments, so that they would be immediately available whenever action is required by the artillery. If they have to be obtained from a higher headquarters valuable time is often lost. It is believed that before long aeroplanes will be assigned permanently to regiments of artillery.

V. DEVELOPMENT OF AERONAUTIC PERSONNEL.

20. GENERAL LINE OF DEVELOPMENT IN EUROPE.

In the development of their aeronautical personnel all nations have worked more or less along similar lines. At first these detachments were attached to the engineers. All the pilots and observers were officers, while the mechanics and others were enlisted men. As the science developed and more and more machines became necessary the importance of this branch constantly increased until eventually it formed a separate arm of the service.

Instead of officers only being employed in the flying of the machines noncommissioned officers began to be used as the pilots.

21. OFFICER-OBSERVERS AND NONCOMMISSIONED OFFICER-PILOTS.

The observers were either trained staff officers or officers of particular branches when the reconnaissance being made especially concerned a certain branch. For instance, in the observation of artillery fire an artillery officer, for the inspection of a demolished bridge over a great river an engineer officer, or for the observation of the tactical or strategical dispositions of an enemy's troops a staff officer. Noncommissioned officers are now very generally used as pilots. All countries now at war have found that they have places for all the trained pilots they can possibly obtain. In general the units are commanded by officers and a certain number of the pilots are officers, but the bulk of the piloting is done by enlisted men while the officers are carried as observers.

22. LOSSES TO AERO PERSONNEL IN WAR.

The losses to the flying personnel in war, when equipped with proper machines, seems to be less than that of infantry, cavalry, and artillery in the order named.

23. DEVELOPMENT OF AERONAUTIC PERSONNEL IN THE UNITED STATES.

In the United States the development has been along similar lines to those employed in Europe, with the difference that here a branch of the service existed that did not formerly exist in the European armies. It was a development of the Civil War, i. e., the Signal Corps. This corps is charged with the transmission of information between the various units of an army; the captive balloons had formerly been assigned to it, and when the aeroplanes made their appearance they naturally fitted in. In this way all the agencies for the transmission of information are kept under one head, which should give not only the maximum amount of efficiency in such transmission but also obviate the necessity of creating a new arm of the service. The development of aero units in the United States has been slow for various reasons: First, on account of the fact that very little money has been appropriated compared to the sums appropriated in Europe. Second, the selection of the flying personnel has been limited to lieutenants of the Regular Army, unmarried, and below 30 years of age. This reduces the number of eligibles to a very small compass and does not give the results that are necessary. In the development of a flying personnel it is thought that, in addition to a certain number of officers obtained from the Regular Army as now provided for by law, pilots should be obtained both from among the enlisted men and from suitable civilians who enlist for that purpose. When they have proved their ability to be efficient pilots they should be placed in a special grade to be designated by a suitable name, such as "aero pilot, Signal Corps," for instance. This grade should be analogous to the grade of warrant officer in the Navy. When such men leave the service for any cause which does not interfere with the performance of the duties of pilot, arrangements should be made to obtain their services at once at the outbreak of war. The observers should be tactical officers who have received training. The present organization authorized for the aero squadrons in the United States provides that each one have 12 aeroplanes—8 of the reconnaissance type, 2 of the speed type, and 2 of the battle type. The personnel numbers 20 officers, 18 of whom are pilots. It is intended that staff and Artillery officers be used as observers. The United States squadron appears to be a well-balanced unit for work in this country, judging by the experiences obtained in Europe. It should be perfected as soon as possible and every effort made to give our Army the aircraft of all types needed for its use. Lieut. Col. Reber, in this connection, says:

We who in the beginning started the movement are now at the tail of the procession. We have no dirigibles, but very few trained men, and fewer machines.

The manufacturing industry is moribund from the lack of business, and there is no future for it. We have no aerodynamical laboratories in which to study the problems, and no engineering courses, except one, in which to develop our constructors. The Government has not stimulated any advance in the design of machines or motors by competition for substantial reward. We have no national league, as in France and Germany, to assist the Government by private subscription and by public demand for the development of air power. The interest of our people in aeronautics at large is dead, and has been perhaps so lulled by a sense of false security and the belief that war will not come to such a vast and powerful Nation as ours; that it will not heed an oft-quoted maxim of the Father of our Country, "In time of peace prepare for war." In no particular is it more impossible to make up deficiencies after the outbreak of hostilities than in aeronautics. What is to be done?

Evidently a strong appeal should be made to Congress for suitable legislation.

24. SCOPE OF NEEDED LEGISLATION.

What is needed is legislation that will give means of obtaining a sufficient personnel of pilots, enough money to buy suitable machines including excellent engines, and the training of a suitable number of officer-observers. Provision should be made for the creation of captive-balloon units, and dirigibles of various types should be developed.

THE MILITIA AS ORGANIZED UNDER THE CONSTITUTION AND ITS VALUE TO THE NATION AS A MILITARY ASSET

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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THE MILITIA AS ORGANIZED UNDER THE CONSTITUTION AND ITS VALUE TO THE NATION AS A MILITARY ASSET.

1. UNDER THE CONSTITUTION THERE ARE TWO WAYS OF RAISING TROOPS.

(a) Directly under the power of Congress "to raise and support armies." (Art. 1, sec. 8, par. 11.)

(b) Indirectly under (art. 1, sec. 8, par. 14) the power "to provide for calling forth the militia to execute the laws of the Union, suppress insurrections, and repel invasions."

(A. W. C. Serial 25, Part I, p. 45) But for the valuelessness of the militia (and other short-term troops), the provision of the Constitution which authorizes the Federal Government "to raise and support armies" would probably never have been adopted, because of the traditional fear of a standing army. As it was, this provision was bitterly opposed and barely received enough votes to be carried.

The omission of the clause would have resulted in a dependence upon militia alone.

2. THE FIRST IMPORTANT MILITIA ACT WAS THAT OF 1792.

This act provided for compulsory enlistment and the performance of military duty by every able-bodied male between 18 and 45, and required their enrollment as State militia; hence, for the United States to raise Regulars or Volunteers under this act would be an encroachment upon a body already subject to the State as militia.

As this act carried no appropriation for arms, equipment, enrollment, etc., and as there was no penalty for failure to carry out its provisions, and as there was no way to coerce the governors of States, it resulted that the States gradually assumed the power of legislating for the militia—the war power was practically turned over to the governors.

3. MILITIA LAWS OF 1808 (1661) AND 1820.

In 1808 Congress appropriated an annual sum for arms and equipment; in 1820 it passed an act requiring that field exercises and discipline in the militia should be as observed in the Regular Army.

4. FAILURE OF THE SYSTEM.

The failure of the system in use during the Revolution and subsequently was largely due to short enlistments, method of securing officers, and lack of control by the Federal Government.

The system was a failure during the Revolution and in every succeeding war. This was particularly true of militia (and it was true for other classes of troops where the Federal Government failed to assert its power or relinquished it).

5. WORTHLESSNESS OF THE MILITIA.

To show its lack of value as a military asset the following statements are quoted from the writings of George Washington:

(A. W. C. Serial 25, Part I, p. 42) Certain I am that it would be cheaper to keep 50,000 or 100,000 in constant pay than to depend upon one half the number and supply the other half occasionally by militia.

The time the latter are in pay before and after they are in camp, assembling and marching, the waste of ammunition, the consumption of stores which * * * they must be furnished with or sent home, added to the other incidental expenses consequent upon their coming and conduct in camp, surpass all idea and destroy every kind of regularity and economy which you could establish among fixed and settled troops and will in my opinion prove, if the scheme is adhered to, the ruin of our cause * * *. For if I was called upon to declare upon oath whether the militia have been more serviceable or hurtful, I should subscribe to the latter * * *.

(A. W. C. Serial 25, Part I, p. 43) That an annual army raised on the spur of the occasion, besides being unqualified for the end designed, is * * * ten times more expensive * * *.

(A. W. C. Serial 25, Part I, p. 44) The only things that counted for efficiency were length of service and military experience of the officers.

The above quotations are just as true to-day as they were nearly 140 years ago.

6. VOLUNTEER ACT OF 1898 AND LATER MILITIA ACTS.

The volunteer act of 1898 was based on the Constitution. It provided for a force that could be used at home or abroad and for general military purposes, and did not attempt to use a force that the Constitution restricted to three specific purposes. Legislation since then has gone backward and makes the attempt to use what the experience of 140 years has shown to be not a dependable force on account of constitutional limitations. The latest militia laws are those of January 21, 1903, May 27, 1908, April 21, 1910, and April 25, 1914 (volunteer law).

These laws do not correct known defects in the militia, even those that, the Constitution not preventing, might be corrected.

"The laws governing the transition from the service of the State to the service of the United States are more indefinite and more liable to lead to confusion and embarrassment than they ever were before." (3702 Congressional Record, 1911.)

7. THE MILITIA AS AN ASSET IN CARRYING OUT PLANS FOR THE NATIONAL DEFENSE.

To be of real value as an asset in preparing war plans it should be possible to answer the question, What percentage of the present personnel of the Organized Militia, or as it would be at the time the President issues his call, will be available?

This question can not be answered even approximately.

The last report of the Chief of Staff (1914) gave the strength of the Organized Militia (mobile) as 113,929, but this does not represent the number available in preparing war plans.

In the first place there is a dual responsibility, the governor and the President, and there may be conflict.

The President would issue his call through the governors of States. (Sec. 4, act of 1908.) He can not issue the call directly to the Organized Militia officers as was possible before (under the act of 1903).

If certain governors were not in sympathy with the war. (In 1812 the governors of Massachusetts and Connecticut and later the governors of Vermont, Virginia, North Carolina, Kentucky, Tennessee, Arkansas, and Missouri refused to call forth the militia in response to the President's call.)

If their constituents fear their own section will be attacked;

If great political pressure is exerted to prevent militia of certain States being sent to the place designated by the President;

If certain governors should disband the Organized Militia in their States (West Virginia, South Carolina, Nevada, and Kansas governors have done this); then the President's action would be in part nullified, and from this cause alone the resultant force might easily be considerably less than the existing Organized Militia.

8. FAILURE OR REFUSAL OF TROOPS TO SERVE.

(A. W. C. Serial 25, Part IV, p. 37) "The response to the call for volunteers under the act of April 22, 1898, at once illustrated the worthlessness of the existing militia as an auxiliary to the Regular Army. * * *

"Of the militia borne on the company rolls, many refused to volunteer upon reasonable grounds, 25 per cent were rejected prior to muster, and 25 per cent were rejected on physical examination after muster."

The Organized Militia is better trained, officered, equipped, and disciplined than in 1898, but men are about the same now as always, and if they are not inclined to serve in war they will find a way to avoid service.

Section 7, act of 1908, provides:

That any officer or enlisted man of the Organized Militia who shall refuse or neglect to present himself for such muster, upon being called forth as herein prescribed, shall be subject to trial by court-martial and shall be punished as such court-martial may direct.

Under this provision it is not believed to be practicable to try and punish such offenders. It might be used as a threat, but it is not believed that it will deter many who do not wish to serve.

9. LACK OF PHYSICAL FITNESS.

Section 7 of act of 1908 further provides:

And without further medical examination previous to such muster, except for those States and Territories which have not adopted the standard of medical examination prescribed for the Regular Army.

Because the standard for medical examination prescribed for the Regular Army has been adopted by the States it does not follow that they conform. Those who have inspected the Organized Militia know this, and men not qualified physically would shortly have to be discharged and might later become unworthy pension claimants. (457 A. R. (b).)

The Report of the Chief of Militia Division, page 33 (1914), under the column headed "Not apparently conforming, etc., * * *" a total of 3,218 is shown; the last column of table on page 33 shows 720 discharged for physical unfitness.

If the necessarily superficial examination showed 3,218 unfit, it is believed a searching examination would reveal several times such number unfit.

Page 206 of the report above mentioned shows that the Organized Militia is 16,000 short of the (old) minimum, and further states:

In no State is the prescribed peace strength of all organizations of the Organized Militia maintained and that in many instances the deficiency has reached such a figure as to leave the corresponding organizations such in name only—organizations of no value as a military asset to the Federal Government.

It is believed that many organization commanders are very lax as to physical qualifications in order to secure the prescribed minimum.

If all of the organizations of the Organized Militia could be kept up to the prescribed minimum with men qualified physically, the situation would not be so bad, but it seems to have been demonstrated that, due to (a) labor opposition, (b) objections of employers to

absence of employees, (*c*) lack of inclination, interest, incentive, etc., it can not be done. So that for reasons enumerated above it is doubtful if as many as 75,000 of the existing would actually be obtained.

10. TIME FOR CONCENTRATING.

Due to variations in distance from the point of concentration, the varying promptness of the various governors in acting, the varying degrees of readiness to move, of the organizations themselves, there will result an assembling of a percentage (unknown) of the Organized Militia by dribbles over a considerable period of time (not determinable).

11. CHARACTER OF THE FORCE ASSEMBLED.

Section 18 of the act of 1903 requires, for participating in certain funds distributed by the Federal Government, participation in five days' camp or march and 24 periods of instruction.

Assuming that a man attended five days' camp and 24 drills of $1\frac{1}{2}$ hours each, he would have received about 60 hours instruction in a year.

The last report of the Chief of Staff (p. 7) states that "over 30 per cent failed to attend 24 drills" and that "it is believed to be a safe conclusion that not a single unit at its maximum strength marched a distance of 10 miles fully equipped and armed."

The personnel of the Organized Militia is constantly changing. Table, page 33, Report of Chief of Militia Division (1914), shows over 35 per cent of the enlisted men served less than one year; over 74 per cent less than three years.

In three years the maximum amount of instruction received by any man would probably never exceed 180 hours—this would be an exceptional case. The instruction would vary during a three years' period from 180 hours to 0, with average instruction of, say, 90 hours.

It is to be observed that the man with approximately 180 hours instruction has almost reached the end of his enlistment and no sooner will he reach the concentration camp than the question of his discharge must be considered.

The lowest estimate of any competent authority as to the time necessary to train a man to be an efficient soldier, with intensive training, under experienced officers and noncommissioned officers is 1,500 hours. It is apparent how far the average enlisted man in the Organized Militia with under 90 hours (15 days) instruction, and even the man with the maximum training, falls short.

As a matter of fact the entire personnel might have been replaced by raw material and the average instruction reduced to zero, with nothing as an asset left but the organization, if that be an asset.

There may have been enough raw material added to bring existing organizations up to "war strength," but in this case the average instruction would thereby be reduced to about 40 hours or, say, the equivalent of seven days.

12. TIME THIS FORCE MAY BE HELD FOR SERVICE.

Section 4 of the act of 1908 (amending sec. 5 of 1903) states—

He may specify in his call the period for which such service is required
* * *;

And—

no commissioned officer, etc., * * * shall be held to service beyond the term of his existing commission or enlistment * * *.

Thus it is apparent that the best trained men would soon begin to drop out.

13. HOW THIS FORCE MAY BE USED.

The Constitution and laws based thereon provide that it may be used "to execute the laws of the Union, suppress insurrections, and repel invasions."

Section 4 of act of 1908 (amending sec. 5, 1903) provides: "shall continue to serve * * * either within or without the territory of the United States * * *."

But the Attorney General held, February 17, 1912—

I think that the constitutional provision here considered not only affords no warrant for the use of the militia by the General Government, except to suppress insurrection, repel invasions, or execute the laws of the Union, but, by its careful enumeration of the three occasions or purposes for which the militia may be used, it forbids such use for any other purpose.

14. WASTEFULNESS OF SYSTEM.

The Secretary of War states on page 7 in his "Outline of Proposed Military Policy," November 1, 1915—

Federal Government appropriates \$6,614,532.13 annually for or on behalf of the National Guard.

The States individually appropriate for their respective guards an aggregate of \$6,244,214.98 annually—

or a total of \$12,858,747.11.

This sum, at a cost per man of \$914, would support 14,068 trained men constantly in service.

Or figuring the entire cost of supporting a reserve at one-fifth the cost of troops with the colors, the above sum would support 70,340 men, trained and ready for immediate service.

There can be no doubt that this sum might better be used to support such trained reserve as against a possible 75,000 Organized

Militia with an average of 90 hours' training—for limited uses only—with inexperienced officers available as first-line troops at some distant date, probably six to nine months.

The Canadian militia, with, possibly, training equal to that of our average Organized Militia, was not considered fit for duty on the Continent until more than six months after their arrival in England. Many (10 per cent) of the Canadian Militia had to be returned as unfit for military service.

15. AS DETERRING THE RAISING OF VOLUNTEERS.

Section 4 of act of 1908, amending section 5 of act of 1903, provides:

The Organized Militia *shall* be called into service of the United States in advance of any volunteer force which it may be determined to raise.

Section 3 of the act of 1914 provides that when three-fourths of the minimum strength of each organization volunteers * * * it may be received into the volunteer forces in advance of other organizations, etc. * * *

It is believed that these sections will have the effect of holding up volunteering until it is known what the Organized Militia is going to do and how many are coming into the service as militia or as volunteers.

16. NUMBER OF ORGANIZED MILITIA AND AMOUNT OF TRAINING OF THOSE SECURED BY THE CALL.

When the Organized Militia is concentrated in response to the President's call, we will have of the existing Organized Militia personnel, as militia called into the service of the United States, a force certainly not exceeding 75,000, with average instruction not exceeding 90 hours, with officers appointed by the governors, trained by the States, with constitutional limitations as to the purposes for which it may be used. As to those organizations which decide to volunteer, the same defects would exist except the last.

17. THE ORGANIZATIONS OF ORGANIZED MILITIA AND TRAINING OF PERSONNEL AS AN ASSET.

Reorganization of the Land Forces (p. 58) states:

* * * is a force actually in being and one composed largely of officers and men who have volunteered for military training because they desire to serve as soldiers in the event of war. The Organized Militia, in short, constitutes an existing organization.

It has been stated further:

Aside from the Regular Army, it is the only organized military force in the United States. * * * Except the military department in certain schools, it has been the only source of instruction in military matters for the citizen

who does not devote his whole time to the military profession. It may be fully admitted that the training received has not been an adequate return for the money expended, but that training has not been entirely without value.
* * *

Many of the officers of the Organized Militia have been enthusiastic students of military subjects and have acquired a theoretical and practical knowledge which would be of value to the Government in time of war. * * *

It has been alleged also that—

even skeleton organizations are of value to build on in an emergency.

18. HOW PRESENT ORGANIZED MILITIA HAS IMPROVED.

The militia laws now in force are not an improvement, generally, over the earliest, and do not improve the system that has always obtained.

More attention has been given to the Organized Militia by the Federal Government. Money has been appropriated in larger sums for various purposes. Officers and enlisted men of the Regular Army have been designated to assist. Improvement has been made in consequence, but the system itself is bad, and a really dependable force can not be produced without the correction of well-known defects.

There should be complete Federal control as to appointment of officers, amount of training, as to when and where it may be used (constitutional amendment necessary to make the militia such a force).

Enlistments should be long or for the war.

Should be a reserve, supply depots, etc.

19. CONCLUSIONS.

What is required is to secure quickly at the outbreak of war a force of trained men. This can only be done by making the necessary preparations before war comes. The Organized Militia will not produce such a force. It can be provided by a system based on a combination of volunteering and conscription with Federal control.

As "continued reliance upon the Organized Militia has actually stood in the way of our getting anything better," it would seem the wisest policy to place no dependence upon such a questionable asset as the Organized Militia and to replace it at the earliest practicable moment by a proper Federal force.

It is not believed that the military instruction possessed by officers and enlisted men of the Organized Militia should be wasted, but their training and military knowledge should be utilized to the utmost in the preparation of the Federal force above mentioned.

MOBILIZATION OF INDUSTRIES AND UTILIZATION OF THE COMMERCIAL AND INDUSTRIAL RESOURCES OF THE COUNTRY FOR WAR PURPOSES IN EMERGENCY

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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MOBILIZATION OF INDUSTRIES AND UTILIZATION OF THE COMMERCIAL AND INDUSTRIAL RESOURCES OF THE COUNTRY FOR WAR PURPOSES IN EMERGENCY.

1. ACTION TAKEN BY OTHER COUNTRIES.

The mobilization of industries has been undertaken in all the countries that are at present at war. Reports from abroad are incomplete on this subject, but all indicate that a more or less perfected scheme has been adopted in all countries. An enabling act is the first requisite, and the details of its exercise vary in each of the countries.

In Russia a committee was appointed to supervise the manufacture and supply of war munitions, making use of all civilian plants. The president of the Duma, an ex-minister of commerce, and two prominent army officials were also made members of this committee for purposes of consultation in regard to technical matters.

In England the Government control of all engineering industries was taken over under an act called the "mobilization of industry act." This was passed with ease and rapidity by the House of Commons. The original act provided for the taking over and control of any works where war munitions were being made. Later, the act was amended to include all industries that could be utilized if modified. Power to cancel existing contracts with private parties was also made a part of the law.

In France an act called the "Dalbiez Act" was passed, under which all commercial manufacturing plants, used in whole or in part for making supplies for the Army, were taken over by the Government. Originally all skilled workmen, heads of departments, and superintendents were excused from military service. It was found that this exemption was abused and a large number of men suitable for military services, but not absolutely necessary in the manufacturing plants, avoided military service. The civilian superintendents of the works taken over report that they have no trouble with strikes or labor disorders while under military control, for as soon as a workman by his act shows that he is not necessary in the plant itself he is available to go to military service in the field, which acts as a deterrent against strikes.

In Italy all the larger automobile factories or garages have been taken over for the manufacture of war munitions.

Similar provisions have been made in Austria and Germany. In most of these countries this mobilization of industries is carried down to the smaller industries in minute detail. For example, in both Austria and France all the horses and wagons suitable for military service are listed, and the record is kept by area officers so that the Government at any time can ascertain how many horses and wagons are available, and their condition, in any stated district. There is a price fixed by law at which owners shall be reimbursed for their teams and wagons used for military purposes.

2. NECESSITY FOR ACTION IN THE UNITED STATES.

The subject of the mobilization of the industries in this country has been discussed, but no definite action has as yet been recommended or undertaken. The desirability of taking steps to acquaint our larger manufacturing establishments with the necessary details to enable them to fill a Government contract has received careful consideration. A number of representatives of the larger manufacturing establishments have expressed their willingness to undertake this preparation. It has been proposed that the Chief of Ordnance send the necessary plans and specifications for types of guns and ammunition to manufacturing establishments presumably capable of making these munitions, each company to be awarded a small contract and given the necessary Government inspectors and superintendents to advise and supervise, so that when this small contract was filled the templates, plans, and dies could be retained at the factory, and from the experience gained in filling this small contract they would be able, without delay, to undertake larger contracts in case of necessity. It was found that this plan was not in accordance with the law or with the desire of Congress. This year, however, legislation permitting this method of procedure for the preparation of large manufacturing plants for Government use has been recommended.

3. REPORTS FROM THE GENERAL STAFF AND BUREAU CHIEFS.

On September 13, 1915, in a memorandum for the Chief of Staff by the Chief of the War College Division, on the subject of a proposed plan to enable private manufacturers to promptly furnish war material in case of emergency, the question is considered in detail and heads of bureaus were called on for recommendation as to the additional legislation necessary to enable their department to purchase war material from private manufacturers.

SEPTEMBER 13, 1915.

MEMORANDUM FOR THE CHIEF OF STAFF.

Subject: Proposed plan to enable private manufacturers to promptly furnish war material in case of emergency.

1. Herewith is a memorandum from the Acting Chief of Ordnance, accompanying memorandum for the Chief of Staff (WCD 8121-19), August 17, 1915.

2. The Acting Chief of Ordnance enumerates obstacles to be encountered as follows:

"The furnishing of drawings and specifications * * * would involve considerable expense, and it is a question whether the present wording of the appropriations would permit of such expenditures. * * * the furnishing of such information at this time would be contrary to the instructions of the Secretary of War, as quoted in paragraph 3 of the memorandum of the Chief of the War College Division * * *.

"* * * the number of such manufacturers is large, and that the ability of the department to give orders for material is limited to the appropriations available, which, at present, are limited by congressional action to but a small part of the appropriations for the various purposes * * *.

"* * * such orders could be but limited, and unless occasional orders could be placed with each of the firms selected it is anticipated that they would soon lose interest * * *.

"* * * under existing laws when purchases are to be made orders must be placed with the lowest responsible bidder for the best and most suitable article. As long as this restriction is imposed the majority of the orders would be secured by a limited number of manufacturers who are in a position to underbid those with less satisfactory equipment and higher operating expenses * * *."

3. The Acting Chief of Ordnance recommends that now, if the instructions of the Secretary of War are modified, if not, then after the close of the present war—

"* * * a carefully selected list be prepared of private manufacturers for each class of ordnance material, and that drawings and specifications of the material they could manufacture be furnished them in order that in renewing or increasing their plant it may be further adapted to the manufacture of the particular ordnance material in question, and that the management may make a study of the manufacture of such material * * *."

4. The War College Division is aware of the obstacles due to limited appropriations, restrictive legislation, instructions of the Secretary of War, etc.

Also, that some concerns will lose interest if they can not see a profit, but believes—and the belief is largely based on the character of the many letters received by the Secretary of War during the past year from railroad officials, corporations, engineer societies, manufacturers, etc.—that a large percentage of manufacturers would willingly cooperate, through patriotic motives, in preparing to manufacture supplies required in war.

5. The War College Division concurs in the method of procedure recommended by the Acting Chief of Ordnance, and further recommends that in the next estimate of funds a suitable sum be included for the specific purpose of covering necessary expenses for furnishing private manufacturers with drawings and specifications of the material they could manufacture and for trial orders to demonstrate their capacity and the suitability of their equipment.

M. M. MACOMB,

Brigadier General, Chief of War College Division.

As a result of the above memorandum the following was received at the War College Division October 1, 1915:

DRAFT OF MEMORANDUM.

WCD 8121-27

From: The Chief of Staff.

To: The Chief of the War College Division.

Referring to the accompanying proposed memorandum relative to the encouragement of reputable and competent private manufacturing establishments to equip themselves for furnishing war material of the class needed by the Government, and to maintain themselves in condition for manufacturing such material, the Secretary of War has directed that the chiefs of the staff departments give this subject consideration and submit, in connection with their annual estimates, such proposed legislation as may be necessary to free them from the statutory restrictions which now prevent the inauguration of such a policy. In so far as the restrictions imposed by the War Department, with reference to the neutrality of the United States or other circumstances, are concerned, the chiefs of the staff departments are also instructed to bring to the attention of the Secretary of War any case in which it appears to be appropriate to modify the restrictions thus imposed.

(Copies to the chiefs of the staff departments for their information and guidance.)

Approved:

LINDLEY M. GARRISON,
Secretary of War.

Approval recommended:

H. L. SCOTT,
Major General, Chief of Staff.

Received Office Chief of Staff September 30, 1915.

Received War College Division October 1, 1915.

The following is a brief of the reports made by bureau chiefs:

The Chief of Ordnance reported that a draft of legislation authorizing such purchase in time of emergency had been incorporated in the estimate submitted by the Ordnance Department for the ensuing fiscal year.

The Quartermaster General reported that Revised Statutes No. 3709 in the act of July 5, 1884, give ample authority for the purchase without advertising when immediate delivery is required by the public exigency, stating further that this would seem to permit any purchase at any time in the event of war.

The Chief of Engineers quoted that he had included the following provision in the estimates of appropriations in the Army appropriation bill now being prepared in his office:

The Secretary of War may, when in his opinion to the manifest interest of the United States, authorize the procurement of engineer equipment required for military purposes from such private establishments as he may select.

The Surgeon General reported that in his opinion the only way to establish the war reserve is to procure beforehand a reasonable reserve in actual possession of all articles not perishable which are not

ordinarily to be found in the markets, but which must be made to conform to especial desire.

4. SUGGESTED PLANS FROM OTHER SOURCES.

In addition to the reports from bureau chiefs just quoted, suggestions have been received from various outside sources as to methods of organizing various commercial industries. Most of these plans suggest methods more or less elaborate, but all are based on voluntary response of individuals and service of industries, and for this reason it is believed they will prove unsatisfactory and inefficient.

Under the present limited or lack of control of the United States Government over manufacturing industries no real progress can be assured without further legislation. Many prominent industries indicate their willingness to act with the Government through patriotic motives, but unless there is some actual obligation existing between the two little can be accomplished.

An excellent example of a plan of this nature is one proposed, and copyrighted, by Mr. Martin J. Gillen, of the Mitchell Wagon Co., of Racine, Wis., who states:

The original plan was sent to all the executive officers of this Government, United States Senators and Congressmen, the Governors of the several States, the presidents of universities, the Army and Navy officers ranking from captains upward, the retired officers of the Army and Navy, the officers of the Grand Army of the Republic, 400 of the principal newspapers and periodicals of the land, and about 200 business men. Out of 600 replies only 3 considered the idea of no value, the remainder considered the plan meritorious, and some offered most valuable suggestions which have been incorporated. The plan revised is now submitted anew.

This plan was referred to the War College Division of the General Staff for report and based on a favorable recommendation for considerations made by the Chief of Engineers in a letter dated September 16, 1915 (AGO 2322644-A), reports were called for from the Quartermaster General, the Surgeon General, the Chief of Ordnance, the Chief of Engineers, and the Chief Signal Officer.

The reports in general make favorable comment on certain features of the plan, and in some cases suggest minor objections, but all agree that additional legislation must be obtained to put such a plan into effect.

Mr. Gillen states in closing:

This plan is submitted in the hope that it will draw forth from the executive officers of this Government, the United States Senators, the Congressmen, the executive officers of the several States of this Union, our Army and Navy officers, our editors, business men, farmers, and working men, such publicity and welcome criticisms to the writer to the end that a *final legal plan* may be adopted by this Government which will be so broadly elastic and comprehensive as to embrace any and all conditions that may arise in preparing this Nation that right and justice may be enforced if needed.

Instances are daily occurring where efforts and plans of the Government in experimentation and development work are being hampered, delayed, and even thwarted from lack of authority to demand reasonable and certain response on the part of commercial industries.

A comparatively unimportant example pertaining to experimental work in the development of a field searchlight outfit is quoted below simply as an illustration of delay and obstructions frequently being met even where important interests of the General Government are concerned. Similar action can be expected from any industry under our present laws:

On June 14, 1915, the Engineer depot wrote to the * * * company, stating that the depot desired to purchase a standard * * * truck with generator mounted on the truck body and driven by silent chain from transmission shaft. Asked if the * * * company could supply such a truck and, if so, to quote on one. Between this date and June 28, 1915, correspondence was carried on between the depot and the * * * company and although the latter company appeared reluctant at first to take up the proposition, on June 28, 1915, they replied, stating they would take up the proposition and would have their chief engineer investigate the electrical installation. On July 23, 1915, the * * * company quoted a price on the outfit as requested by the Engineer depot.

On July 28, 1915, the Engineer Depot wrote to the Chief of Engineers, United States Army, requesting allotment to purchase this truck. The letter was returned asking for details of installation and on August 21, 1915, the Engineer Depot returned the letter again by indorsement, giving the details requested. No reply having been received by the Engineer Depot to this letter, the entire matter was dropped at that time.

October 16, 1915, commanding officer, First Battalion of Engineers, received a letter from the Chief of Engineers advising that the allotment requested by the Engineer Depot in letter of July 28, 1915, for the purchase of * * * truck had been made and directing that design and purchase be accomplished by officers of the battalion with the assistance of the Engineer Depot.

October 28, 1915. Letter from one of the officers of the Engineer Battalion to the * * * company, stating that he had been detailed to attend to the purchase of the above truck and explaining that the Engineer Depot had dropped the matter in July, because of the failure in obtaining the allotment at that time. Asked the * * * company if they would still take up the proposition.

November 2, 1915. Reply from the * * * company stating that the requirements were rather severe and they would rather not take the order; that they would be glad to build the special car, but at that time they were crowded with work working day and night, and would not be able to get the job out in short notice. They were very sorry that they could not undertake the proposition at that time.

November 4, 1915. Engineer depot received by indorsement their letter indorsed to the office, Chief of Engineers, August 21, 1915, stating that the allotment therein requested had been granted.

November 5, 1915. Letter from officer of the engineer battalion to the * * * company, explaining that the truck in question was a step in the development of field searchlights for the mobile Army and of particular importance at that time and urging them to reconsider their decision.

November 22, 1915. Letter from the chief engineer, * * * company, saying he had been trying to persuade the factory to build the special car, but, as work was still rushing and the factory was running day and night, they could not possibly afford to build this special model at the present time, but hoped in the future they would be able to do so. In the meantime they would lay out plans in accordance with our requirements and as soon as they were able to build the car they would submit plans for our approval.

During the Spanish-American War in 1898 the sidings and often the main lines of the railroads leading to Tampa, Fla., were choked and blocked even way back into Georgia. Ammunition, guns, and even troops were held up and delayed. Perishable supplies were rotting on the tracks; and with all this the railroads insisted and persisted in maintaining and giving preference to its local passenger and freight service. This condition existed in an aggravated form even between Tampa and Port Tampa, the port of embarkation, and the Government either failed or was helpless under the law to compel preference in service.

The act of January 31, 1862, authorized the President (during the rebellion only) to take possession of railroads and telegraph lines for military purposes.

Chapter 3591, act to amend an act entitled "An act to regulate commerce," approved February 4, 1887 (United States Statutes at Large, Fifty-ninth Congress, 1905-1907, vol. 34, p. 587, Pt. I, Public Laws), provides:

That in time of war or threatened war preference and precedence shall, upon the demand of the President of the United States, be given, over all other traffic, to the transportation of troops and material of war, and carriers shall adopt every means within their control to facilitate and expedite the military traffic: *And provided*, That whenever the word "carrier" occurs in this act it shall be held to mean "common carrier."

Even with this law on the statute books, headquarters and one battery—Third Field Artillery—left San Antonio, Tex., under emergency orders for El Paso to meet a reported hostile movement in force on that city from Mexico, and for no apparent reason the train was sidetracked for the regular traffic and arrived at destination over 12 hours late on the regular passenger schedule.

5. RECOMMENDATIONS FOR NECESSARY LEGISLATION.

In conclusion it may be stated that three considerations and conditions appear especially important and necessary:

First. Authority to place an order.

Second. Obligation to fill an order.

Third. Coordination between departments of the Government and agencies, and regulations governing procedure.

It is therefore recommended that the necessary steps be taken to secure legislation to authorize the following provisions:

1. That the President be empowered, through any head of department or bureau of the Government in addition to the present authorized methods of purchase or procurement in time of war or when war is imminent or whenever in his opinion the exigencies of the service and the interest of the Government demand, to place an order with any individual, firm, corporation, company, or organized manufacturing industry for such product or material as may be required, and which is of the nature and kind usually produced or capable of being produced by such firm or company.

2. That compliance with all such orders or demands for service shall be obligatory on the part of industries concerned, and shall take precedence over all other orders and contracts when in the opinion of the President the conditions warrant.

3. That the compensation shall be fair and just and shall result in a reasonable profit to the industry concerned, as shown by bill of expenses.

4. That there shall be authorized and established a board or commission on mobilization of industries essential for military preparedness, nonpolitical in nature, and including in its membership representatives of the Government selected by the President, and skilled representatives of industries, either permanent or advisory, to be selected by the industries concerned, and the necessary secretaries and clerical assistants whose duty it shall be to organize and coordinate the work to fully meet all requirements of the Government service.

A MODERN ORGANIZATION FOR THE REGULAR ARMY AND ITS USE AS A MODEL IN ORGANIZING OTHER FORCES

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

WCD 9302-1

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SYNOPSIS.

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A MODERN ORGANIZATION FOR THE REGULAR ARMY AND ITS USE AS A MODEL IN ORGANIZING OTHER FORCES.

I. INTRODUCTION.

1. STATUTORY LAWS GOVERNING ARMY ORGANIZATION.

The present statutory laws concerning the organization of the Regular Army of the United States may be briefed as follows:

(a) Brigades and divisions to be composed of a certain number of regiments of Infantry or Cavalry in "the ordinary arrangement of the Army." (Sec. 1114, R. S.)

(b) Brigades, divisions, and Army corps composed of a specified number of regiments required to be organized in time of war, or when war is imminent. (30 Stat. L.)

(c) The several staff departments, composition of, as authorized for service in peace and without reference to their functioning with tactical organizations (bureau's personnel), except in the case of the Engineer Department, the Signal Department, and the Medical Department, where a limited personnel is provided for service with the troops.

(d) Troops of the line—regimental organization of Infantry, Cavalry, and Field Artillery. The Coast Artillery Corps, organized into companies.

2. DEFECTS IN THE PRESENT LAWS.

The defects in the present statutory laws that prevent a modern, scientific, and efficient organization of our Army may be briefly summarized as follows:

(a) The prescribed regimental organization of the three arms, not modern—lacking certain fighting units, as well as important administrative units.

(b) No provision for the personnel of the headquarters and staff of any units higher than a regiment.

(c) No provision for a permanent peace organization of higher units—brigades and divisions.

(d) No provision for necessary divisional train units.

(e) Auxiliary troops not organized with relation to the primary arms of the service.

(f) Enlisted specialists needed to meet modern requirements.

The effect of these defects upon attempts to provide a scientific organization for our Army is explained in the following pages.

II. HIGHER UNITS THAN REGIMENTS.

3. STAFF DEPARTMENTS AND AUXILIARY TROOPS.

The organization of all modern armies is based upon the principle that the primary fighting force is well-trained infantry. This primary fighting force must, however, be aided by proper and accepted proportions of cavalry, field artillery, engineer, signal, sanitary, and supply troops to make a complete mobile fighting machine. The smallest independent unit in which all the various arms are found represented in modern armies is one of approximately 20,000 men, called the Infantry Division in our Field Service Regulations. For the proper and efficient strategical, tactical, and administrative handling of divisions and larger units, including their supply, certain General Staff officers, and a technical and administrative staff, adjutant, inspectors, judge advocate, quartermaster, and ordnance officer are added to assist the commanding general. All these various staff officers are necessary cogs in the wheel.

Just as an operating division of a railroad system requires directing officials to give train orders, a switching personnel, signal operators, and telegraphers, in order to keep the several trains running safely and without confusion for the purpose of moving the traffic, the object for which railroads are maintained, so also, in modern armies the function of all staff officers and auxiliary arms is to contribute to the main object of the Army—to assist the Infantry in defeating the enemy.

4. THE TACTICAL DIVISION.

The latest enactment of law concerning the formation of higher units than regiments is that contained in the volunteer law of April 25, 1914, as follows:

SEC. 4. * * * *Provided further*, That when military conditions so require, the President may organize the land forces of the United States into brigades and divisions and such higher units as he may deem necessary, and the composition of units higher than the regiment shall be as he may prescribe.

Here is authority for organizing these higher units and the composition may be such as the President shall prescribe, but with this restriction:

SEC. 3. * * * *Provided*, That the power to organize volunteer forces shall include the power to provide, *within such limits as are or may be prescribed by law*, the officers and enlisted men of all grades and classes, and the trained nurses, male and female, that may be necessary in the various arms, corps, and departments.

And further:

SEC. 5. * * * to appoint all volunteer officers required by this act, but the number and grade of such officers *shall not exceed the number and grade of like officers provided for a like force of the Regular Army.*

In other words, the organization of volunteers must be patterned after the organization of the Regular Army.

Under the present law the headquarters of these higher units in the Regular Army can only be improvised by detailing the technical and administrative staff, commissioned personnel, from the War Department bureaus and their departmental branches, thus crippling these bureaus when these higher units take the field. The enlisted combatant personnel required for these headquarters can be obtained only by denuding the tactical organizations composing these higher units. This is the case in both peace and war, for under the volunteer law only regiments and lesser tactical organizations are provided from which to organize the higher units. While it is true that these are the bone and sinew of the higher units, still they can not function as a complete machine without a directing and supervising headquarters, for which no provision has been made. Our present peace-time organization provides staff-department commissioned personnel only with a view to the necessary operation of the War Department bureaus and their departmental branches. For time of war the volunteer law provides for increasing this staff personnel in proportion to its present strength and the number of volunteer troops raised, which simply expands the bureau personnel without reference to the requirements of technical and administrative staff personnel for the higher tactical units.

5. DEFECT OF PRESENT SYSTEM ILLUSTRATED.

The defect of this system is illustrated by the attempt to organize brigades and divisions as prescribed in General Orders, No. 9, War Department, 1913, in which these higher units were formed, as far as practicable, from the tactical organizations and staff personnel of the containing geographical departments. It will be noted that the departmental staff was assigned the dual function of department and tactical division staff duty, which was practicable only so long as the divisions remained demobilized. When the Second Division was mobilized at Texas City in 1913 the Central Department was denuded of its bureau staff, which had to be replaced from other departments or from the central bureaus. In time of war the geographical departments must be maintained, and are an important part of the military establishment in the service of the interior. (F. S. R., 247.) The department commander is charged with the recruitment, training, and equipment of all military forces not specially excepted within the limits of his department, and for their mobilization and dispatch to concentration camps. (F. S. R., 252.)

Other difficulties are forcibly brought out in the Tables of Organization, 1914, which show that in order to provide the necessary combatant personnel (enlisted) for brigade and division head-

quarters this personnel has to be detailed from the statutory strength of regiments of the division.

Finally, there are certain much-needed subsidiary units for the complete organization of a division for which personnel is not provided under the present laws—ammunition train, supply train, engineer train, and sanitary train. These trains could not even be improvised in the attempted mobilization of the Second Division at Texas City, ordered in February, 1913.

6. FUNCTION OF TACTICAL DIVISIONS.

The tactical division is, as stated in Field Service Regulations, the great administrative unit which forms the model for the organization of the administrative service of smaller units operating independently. (F. S. R., 264.) All armies of first-class powers are organized on the division as the basic tactical unit. All increments of armies are considered in terms of the division unit. The foundation of an army considered as a fighting force is the division. Hence, one of the first steps in any plan for effecting a modern organization for our Army should be to establish the complete organization for a tactical division, and to build the superstructure on the foundation of the number of division units to be provided. At least one such division should be fully organized, manned, and equipped in time of peace to serve as a model for the organization of the Army in time of war.

7. PROPORTION AND STRENGTH OF MOBILE FORCES.

All of the mobile regular forces maintained in the United States proper should be proportioned and organized as complete tactical divisions, not only to be ready for instant service for any emergency, as the only first-line troops on which the Nation can depend, but also to serve as models for the organization and training of other forces in peace as well as in war. Furthermore, it is necessary that all of the small Regular Army be maintained at statutory maximum strength for the same reasons. At present Infantry regiments in the United States proper are maintained at only 47.2 per cent of the maximum strength; Cavalry at 75.7 per cent; Field Artillery at 77.7 per cent; and field battalions of Signal troops at 58.9 per cent. This reduced strength impairs training, absolutely precludes efficiency, and creates a false model for the organization of other forces. These organizations in time of war would be filled up with recruits, and for a considerable time thereafter even the peace-strength efficiency of these organizations would be seriously lowered by the introduction of such large percentages of raw material.

III. REGIMENTS AND LESSER UNITS.

8. INFANTRY.

The organization of the Infantry regiment, which is the main component of any complete fighting unit, has not been materially revised since the act of March 2, 1899. Since that time the Russo-Japanese War, the Balkan wars, and the present European war have given practical experience showing the necessity for certain subsidiary units for Infantry regiments in order to develop their full fighting efficiency, particularly with reference to the addition of a machine-gun unit as an integral part of the regiment. No organization nor personnel has been provided for such units. Likewise it has been found necessary to add mounted orderlies to care for the horses of the increased number of mounted field and staff officers (also used for scouting and reconnaissance work) and enlisted personnel for supply and transportation purposes. These subsidiary units for the regiment are at present necessarily only improvised by details of enlisted personnel from the 12 statutory companies. This provisional organization had to be resorted to for instructional purposes in time of peace, so as to be prepared for duties that would certainly be required in time of war. For necessary and efficient administration these new subsidiary units, together with the former detachment of noncommissioned staff and band, have been organized provisionally as a headquarters company, a machine-gun company, and a supply company. In order that this personnel may have the proper grades corresponding to equivalent duties performed by the personnel of statutory companies, and that the full fighting strength of the 12 statutory companies may not be weakened by detachment therefrom in time of war, modern organization requires that these subsidiary companies be *sanctioned by law* as additional units for the Infantry regiment. The number of cooks authorized for a statutory company at maximum strength, 150 men, is two, the same as at minimum strength, 65 men. Three cooks should be provided for 150 men.

9. CAVALRY.

The organization of the Cavalry regiment has not been materially revised since the two skeletonized troops were reestablished by General Orders, No. 27, Adjutant General's Office, 1898, and the commissioned and noncommissioned staff was increased by the act of February 2, 1901. Provisional subsidiary units similar to those described above for the Infantry regiment have been found equally necessary for the Cavalry regiment. These subsidiary units should be *sanctioned by law* as additional units for the Cavalry regiment and for the same reasons. Some adjustment of grades of enlisted

specialists, such as stable sergeants, horseshoers, farrier, saddlers, mechanics, wagoners, etc., is necessary to place them on an equal footing in the several mounted branches.

10. FIELD ARTILLERY.

The organization of the Field Artillery regiments dates from the act of January 25, 1907, separating the coast and field artillery. This organization is not sufficiently flexible for adaptation to the present development of the Field Artillery arm, as demonstrated in the present European war. Regiments of two battalions only are provided, whereas experience shows that the heavier type of armament calls for a battalion of fewer batteries and more battalions to the regiment. The organization of the Field Artillery regiment should consist of such number of gun and howitzer battalions as the President may direct. The organization of ammunition batteries and battalions and the artillery park should be prescribed, but the personnel need be provided only in time of war, threatened invasion, or when war is imminent.

Provisional subsidiary units, similar to those described above for the infantry regiment (except the machine-gun unit), appear to be equally advisable for the Field Artillery regiment, i. e., a headquarters company and a supply company. These subsidiary units should be *sanctioned by law* as additional units for the Field Artillery regiment, and for the same reasons.

Some adjustment of grades of enlisted specialists, such as stable sergeants, horseshoers, farriers, saddlers, mechanics, wagoners, etc., is necessary to place them on an equal footing in all mounted branches.

11. COAST ARTILLERY CORPS.

The present organization of the Coast Artillery Corps dates from the act of January 25, 1907, separating the coast and field artillery. While the regimental organization for coast artillery was discontinued by the act of February 2, 1901, the personnel provided is based on the proportion and equivalent of 14 regiments. This regimental proportion for personnel, both commissioned and enlisted, bears no relation to the assignment of the personnel for the duties required thereof at the several fixed fortifications to be manned. Modern organization for coast artillery calls for personnel to fit the needs of the different types of fortifications and their auxiliary defenses. This should be determined by the proper military experts in accordance with the plans for armament of existing fortifications which are to be manned, and for approved projects under construction. In the case of future extensions of fixed fortifications the personnel should be provided for at the same time as the fortifications and their armament, in accordance with their particular needs.

For the present enlisted personnel, Coast Artillery Corps, some adjustment of the grades of enlisted specialists is necessary in order to offer inducements for the retention of skilled mechanics in competition with corresponding commercial positions.

12. ENGINEER TROOPS.

The organization of Engineer troops as part of the line of the Army, consisting of three battalions of four companies each, dates from the act of February 2, 1901. This organization was prescribed without any reference to their function and relation to the basic tactical unit of the mobile forces—the tactical division. Modern organization, as demonstrated by recent wars, calls for a larger proportion of Engineer troops and a different organization than can be provided under the present statutory battalion of four companies. In the Tables of Organization, 1914, by constituting provisional battalions of three companies each, an attempt was made to fit these statutory battalions and companies to the needs on an Infantry division and a Cavalry division, and of field army troops, as pioneer battalions, pioneer battalions (mounted), and pontoon battalions. But the 12 companies now authorized by law are altogether inadequate for the needs of even the three Infantry divisions and one Cavalry division organized by direction of the President, as prescribed in General Orders, No. 9, War Department, 1913. The report of the Board on Engineer Troops, as approved by the Secretary of War, January 19, 1914, represents the modern organization of Engineer troops for our Army, which calls for a regiment of two battalions of three pioneer companies for an Infantry division; a pioneer battalion (mounted) of three companies for a Cavalry division; and a pontoon battalion of three companies (one light and two heavy) for assignment as part of field army troops.

For the present enlisted personnel, Engineer troops, some adjustment of the grades of enlisted specialists is necessary in order to offer inducements for the retention of skilled mechanics in competition with corresponding commercial positions.

13. SIGNAL TROOPS.

The present organization of Signal troops dates from the act of February 2, 1901, as amended by the act of June 30, 1902, and the increase in time of war prescribed by the act of April 26, 1898, together with the Aviation Section of the Signal Corps authorized by the act of July 18, 1914. This branch of the Army is undergoing such changes to meet the advances in electrical communication, and especially in the science of aeronautics, that the law providing the necessary personnel should be very elastic. The enlisted strength of the Signal Corps should be limited and fixed by the President in accord-

ance with the needs of the Army. The numbers in the several grades of enlisted men should be fixed only by percentages that they should bear to the total enlisted strength as authorized by the President. The number of companies, field battalions, and aero squadrons, and the composition of each, should be such as the President may prescribe, in order that they may be adjusted to changing needs.

14. SANITARY TROOPS.

While the present law (act of Mar. 1, 1887) does not count the enlisted men of the Medical Department (Hospital Corps) as part of the strength of the Army, and the Secretary of War is empowered to enlist as many privates of the Hospital Corps as the service may require; and he is authorized (act of Mar. 2, 1903) to organize ambulance companies, field hospital companies, and other detachments of the Hospital Corps as the necessities of the service may require, the numbers in certain grades of noncommissioned officers are fixed by law. Limited appropriations have further hampered the organization of the proper number of sanitary units required for the present organized tactical divisions.

In order to meet the needs of the service in providing its part of a modern organization for the Army, the law governing enlisted men of the Medical Department should provide the requisite number of noncommissioned officers based on a percentage that the several grades shall bear to the total enlisted strength as authorized by the Secretary of War, thus providing a wholly flexible law. The title, Medical Corps, which now embraces only commissioned personnel, should include the enlisted personnel as well, thus doing away with the title, Hospital Corps, as an unnecessary separate corps, and simplifying the military laws governing the Medical Department.

Some adjustment of grades of enlisted personnel is necessary and advisable in order to meet the complaint and opposition of commercial pharmacist associations which have been appealing to Congress with bills for the amelioration of the Hospital Corps personnel.

MOTOR TRANSPORT IN CAMPAIGN

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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MOTOR TRANSPORT IN CAMPAIGN.

I. INTRODUCTION.

The past 15 months of war have resulted in verifying in every respect the predictions of military writers of late years. All pointed out that nature and science would be called upon to serve mankind in many practical ways, and that achievements then (at the time of writing) in their infancy would, under the stress of war, develop into aids which would be found to be of far-reaching importance.

Such of these predictions as relate to the use and application of motor transport have been found to be correct, and this is shown primarily through its improvement and development, but lastly by the fact that it has become absolutely essential to the efficient prosecution of a campaign.

1. GENERAL CONDITIONS OF EMPLOYMENT.

Modern weapons of offense and defense, such as large-caliber mobile artillery, the machine gun, and the aeroplane, have exercised a marked and direct influence on combat in general. Strategy has been affected by the altered conditions affecting the battle, and even the conduct of an action has been influenced. Along with the use of motor transport, which altered the aspect of warfare, both in countries with good highways and in those which lack them, comes a speeding up of the rate at which military operations can be conducted. The strategic mobility of troops has been increased, and this fact will bring about greater ease in the grouping of forces for the battle.

Indirectly they promote "the independence of the troops of their lines of communication, by facilitating the bringing up of supplies and by creating possibilities for concentration and movements which did not formerly exist. Commanders acquire thereby greater freedom of action."

It must not be assumed, however, that the methods of warfare have been revolutionized through the use of motor transport. When the war is over and the newspapers have ceased to announce in big headlines the wonderful achievements of this type of transport, we shall undoubtedly find there are many limitations to be placed on its use. However, there is no doubt that it has aided in a remarkable way the supply and transport of troops.

What may have been found feasible on the western front might not have been found possible in the plains of Galicia and Poland. Difficulties connected with the repair and supply of fuel have limited the use of this transport in a number of cases, but no definite rule can as yet be deduced from the special cases which are set forth in the press and in the popular magazines.

2. VARIOUS TYPES EMPLOYED.

The history of the present war indicates conclusively that all attempts to employ a special type of car or truck for service have ceased. The type of truck or car ordinarily in use in the particular theater of operations before hostilities offers the most adaptable and suitable transport for war in that theater.

In France no attempt has been made to use any particular type of either automobiles or motor trucks, but the Government has taken what it could get from the principal manufacturers. As far as possible, endeavor is made to have all the motor trucks of each army the same make.

Various American trucks have been found excellent in every way, and a light chassis for ambulances is rendering the best service. These can go where heavier vehicles in many cases could not pass, and where they would only encumber the road.

It seems to be generally conceded abroad that the trains corresponding to our field and combat trains should be horse drawn, while the division, corps, and army trains are best constituted of motor transport. There are to be found some exceptions to this rule, but, generally speaking, the official reports are a unit in this respect.

3. MOTOR TRUCKS—USES, CAPACITY, PERSONNEL.

The corps trains, for instance, in the French organization correspond to our divisional trains (supply, ammunition, sanitary, and engineers' trains), have in part been replaced by motor vehicles. The supply train still remains animal drawn, with the exception of that part of it engaged in taking forward beef from the slaughtering points to the regimental train (their meat wagons). The ammunition train remains equipped with animal-drawn caissons. As previously explained, these caissons must often pass off of the metaled roads and travel through fields so as to supply combatant units. Ammunition is pushed up much closer to troops by auto trucks than was the case in previous wars. The *étape* or link therefore to be covered by the caisson is not as great as it used to be. However, the expenditure of artillery ammunition is much greater than was ever contemplated, and the saving of the road space in the length of the *étape* or link has been more than compensated for in the

additional number of trips these vehicles must make. The very large caliber guns are not assigned to the corps, but are part of the army artillery. The size and weight of the ammunition of some of these guns make it practically necessary to replace their ammunition by motor trucks. These guns themselves are so heavy as to make it necessary to carefully pick out the ground over which they are taken into position. They are not mobile in the sense of the guns with the corps and some of the lighter type of heavy guns with the army. Their position is also such as to make their resupply in ammunition much simpler than the smaller guns.

The sanitary trains have been greatly supplemented by the attaching of automobile ambulances directly to these trains, in addition to the animal-drawn units. Although not known definitely, it is believed that some of the animal-drawn elements of this train have been suppressed. The more rapid evacuation of the wounded by automobiles and the distance the automobile can cover has cut down considerably the number of "ambulance immobilisé" (field hospitals) with the corps.

It has been ascertained that to-day the number of automobiles of different classes with the different armies varied somewhere between 2,500 and 4,000 with each army. Aside from the touring cars assigned permanently to different headquarters and the auto trucks and ambulances assigned to the corps and those assigned to special service, such as the aviation service, etc., the balance are attached to the army. They form what might be called the automobile convoy of the army, and they are either temporarily assigned for certain specific work to corps and divisions or are used in pushing supplies and material forward to troops from railheads. The formations of the different "parks" attached directly to the army correspond generally to the formation laid down in our Field Service Regulations for Columns. It is believed that after the war is over and as the auto truck develops in efficiency that the effort will be made to reduce the size of trains with the divisions and corps, and by means of what we call "columns" to push supply and evacuating points closer up to the troops. The English have perhaps gone further in this particular to-day than the French, but it is thought that, with a well-trained personnel and efficient direction, the results that would obtain under this system would be better than the old.

Any intelligent person can foresee that at some future time animal-drawn vehicles with an army will disappear. However, to-day, when roads are not good and when from one reason or another certain vehicles supplying troops must pass off these roads into the field, the animal-drawn vehicle still has its advantage and must of necessity be retained.

In France the roads are excellent and are well kept up. In the Vosges a number of new roads are being constructed. These latter roads are all permanent and beautifully installed.

Notwithstanding these fine roads in France, the combat and field train of combatant units in their entirety, as well as a large portion of their corps train (our division trains), remain animal-drawn.

There seems to be no doubt that when we consider the road conditions in our possible theater of operations we will not be able to change to the motor truck until a much later date than the European army. This will undoubtedly be the case, unless a great advance is made in automobile construction. While the authorities always have been great believers in auto trucks and are satisfied that in time of war we will have need for them in the thousands, it is believed that the development of an efficient auto truck for combat and field train purposes goes hand in hand with the development of an efficient farming auto truck. When an auto truck has been developed that will bring in the average farmer's crop from his fields we will have an efficient auto truck for combat and field train purposes.

One of a great number of uses of auto trucks to-day is to move troops promptly into a threatened sector of the line of trenches. In one operation each division had temporarily under its orders 50 auto trucks for moving troops. These trucks were kept with the reserves. Each truck could carry 20 equipped infantrymen. By the use of these trucks and within a very few minutes 1,000 men could be loaded and moved to the threatened point. With this load and moving at the rate of about 12 kilometers an hour, it would not take long to commence throwing in reserves. These were only a few of the auto trucks that the army had. If the situation became more serious, then additional trucks could also be used for the same purpose.

There is no question but that in other theaters of war, when a war of maneuver has been carried on, these trucks have been used to carry troops on raids accompanying cavalry. The supply trains with cavalry have also been made up of the transport.

The animal-drawn army trains or grand parks, except certain vehicles of the artillery and engineers, have been entirely done away with and their work done by the army automobile convoy.

On the line of communication and in the zone of the interior practically all the transportation in general use is motor-drawn.

The escort wagon has somewhat the same drawbacks as an auto truck when it comes to moving off the roads and in the fields. During this war certain troops could not have held positions had they not a vehicle of resupply that was capable of getting off a road covered by hostile artillery fire and passing through fields under cover to near the troops. It is believed that we should give some serious

study to the working out practically of this question of a suitable type of combat train wagon.

The heavy auto-truck companies are often supplied with trailers, the trailer having the same carrying capacity as the truck. This type usually carries 3 tons, but for all-round service a $1\frac{1}{2}$ -ton truck has been found most acceptable. The use of trailers, however, must depend upon road conditions, and where good road conditions do not exist the strain on the truck is so great as to render the use of the trailers with the truck not advisable.

The number of auto trucks is usually fixed by the number of vehicles required to transport either one day's rations for a corps (125 tons) or two "lots" of ammunition, infantry and artillery (160 tons). The trucks are expected to make 12 miles an hour and to be able to travel about 100 miles a day.

The personnel with an auto-truck company varies, but it is not far from the organization prescribed for our motor-truck companies. (See Tables of Organization.)

The use of motor transport has reduced, by many men, the personnel of the service of supply, thus releasing a greater number of men for the firing line. In the past, during some wars, the number of men required behind the lines was equal, if it did not exceed, the number of fighting men.

4. AUTOMOBILE PARKS.

The extended use of automobiles of every type in the present war has created some new problems, one of the most important being the maintenance of the various motor wagons in a condition for service. Although the reliability of motor cars has been enormously improved in recent years, they, more than most machines, are subject to many ills and troubles.

Motor-car troubles may be conveniently grouped under three heads: Ordinary road troubles, such as can be repaired by chauffeurs or mechanics with the simple tools and repair parts carried for this purpose; second, more serious troubles, which call for shopwork; third, very serious troubles, which call for factory work.

In order to meet satisfactorily the second class of troubles, those calling for shopwork, recourse is had to the organization of so-called automobile parks, one for each field army. Like many other features of the present war, the automobile park is a new creation called for by the emergency of the situation. The number of automobiles of all kinds assigned to the field armies varies according to the conditions, such as size and extent of front of the army, character of country as regards available roads and railroads, etc. The automobiles assigned to each army are numbered serially, and

by observing the numbers noted at different times and places a fair idea of the number of machines belonging to a field army may be obtained. This number averages not less than 2,500 per field army, including both passenger and freight autos. It is evident that with so large a number of machines constantly doing hard service there will be need for some organized and controlled scheme for repairs. This is the task of the automobile park.

In a populous region where position warfare has obtained for some time the problem is easy. Existing garages or machine shops in conveniently located towns afford all necessary requisites for an automobile park and permit of undertaking repairs on a large scale. On the other hand, where field warfare has been the rule and where large industrial towns and villages are lacking, the problem is more difficult, requiring, in the first place, that the repair park have a certain amount of mobility and also that it carry along its equipment and appliances. Under these conditions the repairs that can be undertaken in the field are more limited.

Supposing a field army to be established in some garrison camp, its personnel would be housed in the barracks of the peace garrison. If no suitable buildings were available for shops and garages, suitable light-frame structures are erected, arranging the buildings by centering the repair departments around the sides of a rectangle, with open sheds in the center for housing machines repaired and awaiting repairs.

The various shops are a carpenter shop, painting and glazing shop, machine shop equipped with power lathe, shaper, emery wheel, drill press, etc., a vulcanizing shop, a blacksmith shop, and an oxy-acetylene welding outfit. The latter is a most useful affair, enabling broken parts of steel, brass, and even aluminum to be welded together. There is also a small printing shop for printing various blank forms used by chauffeurs in recording car performances. A large stock room containing spare parts of all usual makes of automobiles forms part of the park and enables repairs to be made very quickly.

About 200 cars are usually on hand at the park, some pretty bad cases among them, including several which had suffered from shell fire. With appliances available quite serious repairs can be undertaken without returning cars to factory. A supply of repaired cars in running order is maintained from which issues can be made in exchange for cars turned in for repairs.

The personnel of the park consists of one captain, taken from the railway regiments; two lieutenants, one from the cavalry and one from the artillery; and about 400 men drawn from recruit depots, and most of them skilled workmen.

5. THE ARMORED CAR.

The weak point in the comparatively heavy armored car lies in its dependence on the condition of the road and its helplessness before ordinary obstacles, such as ruts and ditches. It has its uses, however, under the conditions noted in the following remarks:

In the German invasion of Belgium * * * motor vehicles apparently played an enormously important part in enabling the enemy to push forward more rapidly than he could have done had he had to depend entirely on his cavalry. The armored car early proved its value for this sort of patrol work. It exercised another influence on the cavalry arm, in that, by expediting the rate at which it was possible for the invader to push forward, it placed correspondingly a greater strain on the mobility of cavalry, and to that extent used up the horses of the enemy at an additional rate, as instance the extremely ill condition into which they got last autumn.

Thus in this connection the advent of the motor vehicle to modern warfare made possible operations beyond the scope of cavalry unaided, and at the same time put a greater strain on that arm. It has also speeded up the movement of the main armies, because, unlike horses, motor vehicles do not tire during the spells in which it is possible for men to work them.

6. MOTORCYCLES.

These have generally proved unsatisfactory, and for messenger and orderly service they have been replaced by the light motor car. Light 4 or 5-horsepower, two-passenger cars, like the Bébé Peugeot and the Zebre, can go almost anywhere.

In some newspaper reports and in letters from the front rumors of the use of a large number of motorcycles to move troops occur, but no verification of this has ever been received through official channels.

Based on these reports an organization of a large number of motorcyclists has been proposed, with a view to their use in place of cavalry. Notwithstanding the comparative invisibility of the motorcycle and its individual adaptability to a varied terrain such a plan appears unfeasible. In the first place the men would have to be trained as soldiers before they can become military cyclists, and, in the second place, no teamwork of the mass could be assured without some training of the whole as a body.

Companies for duty at Army corps or division headquarters are feasible, but it is not believed that large bodies can operate with the same ease as cavalry. It is safe to assert that during operations in Courland a motorcycle corps of 60,000 could not have replaced that amount of cavalry or have done the work expected of them.

7. USE IN COUNTRIES HAVING FEW ROADS.

Perhaps the phase which has most vividly brought home the change wrought by the advent of the motor in the conduct of military operations has been its employment during the campaign against De Wet.

The average mind can here appreciate the advance made by the present-day methods of warfare, as the scene was identical in nature with that of 15 years ago, when something in the neighborhood of a quarter of a million British soldiers were engaged in rounding up De Wet and his Boers. There is, however, this difference, that, while the numbers concerned were much smaller than in the campaign referred to above, the uprising led by De Wet was in the nature of a surprise, which made the mobilization of the necessary troops and the accumulation of supplies impossible in advance of the emergency. The hostile Boers in this instance had precisely the same mobility which enabled them to elude the British troops so easily 15 years ago.

The difference in the later campaign is shown by the fact that motors were employed instead of horses and horse-drawn transport.

But these cars were not built for military use, being merely machines owned by members of the Johannesburg Automobile Club, many designed for use only on roads as we understand them in Europe. The work in hand, however, required that the cars should be driven across country in all manner of directions, over the veldt where there chanced to be neither road nor track, and across the beds of rivers.

Moreover, the vehicles usually carried something more than the normal load. Scarcely two cars were of a kind or model. Thus, from the point of view of military service, it would have been impossible to select anything in the way of motor vehicles less suitable for the task. Of course, many of the cars broke down, as they are breaking down every day in the war area in Europe. But the thing that counted was that more cars got through than fell out of the running, while of those that failed it must be observed that up to the point at which it broke down each assisted to keep the enemy on the run. To that extent it did its work toward rounding him up.

8. AMBULANCES.

Motor traction has worked wonders in this war with the food and ammunition supply, yet in each one of these services the final stage is still made by horse-drawn vehicles. However, under the existing conditions of trench warfare the sanitary service has gone even further and have supplanted all slow-moving horse-drawn vehicles by light and efficient motor ambulances.

The motor ambulance is the machine for which the ordinary pleasure car chassis, unaltered, has proved most suitable. The provision of these ambulances has undoubtedly contributed enormously to the saving of life and suffering. But the best of them scarcely begins to realize the possibilities of a motor vehicle for this service in regions in which roads are either lacking or

are torn up as a result of warfare. They are no longer using ambulances having the excessive overhang so common among those presented at the beginning of the war. But that is only a slight improvement, for even to-day the driver of the average motor ambulance sits in the best swung position. At least part of the patient's body as he lies flat—usually the feet and the lower part of the legs—projects behind the back axle.

Nor should motor ambulances have too long wheel bases, because it is often necessary to turn them in brief compass. Obviously the driver should not be placed where he sits in an ordinary touring car or town carriage. If the motor must be accommodated in the same part of the chassis, then the ambulance driver and the attendant seated beside him should be placed above the engine, as they are in certain types of French and German motor buses.

This arrangement would enable the best part of the chassis ordinarily occupied by the driver to be used by the patient, the whole of whose body could accordingly be brought well between the two axles. There is nothing to the speed at which these ambulances have to be driven that would render it undesirable to accommodate driver and attendant above the motor. Nor is this all, for the present system of springing is at best a mere combination of make-shifts, in that all springs are the result of building up laminations of steel plates.

Each spring so built up can give the smoothest riding only at certain vibrations and certain loads, whereas the whole point of having a motor vehicle for any sort of service is that you can use it either with full load, with part load, or without any load; also that you can drive it over any sort of surface at any speed of which it is capable, from the slowest to the fastest. No form of laminated steel spring can therefore be quite suitable for the purpose. Possibly pneumatic suspension will prove a successful solution of the problem.

These motor ambulances, under cover of darkness, come right up to the dressing stations and evacuate direct to the clearing stations, which are back at corps headquarters in some suitable building. It is due altogether to these swiftly moving ambulances that wounded can be forwarded to the base and finally to England. A man if wounded in the forenoon is out of luck, but the man wounded in the afternoon may reach a hospital in England before his name reaches his corps headquarters as among the wounded.

9. FUEL.

Sufficient data do not yet exist from which we can state definitely the various kinds of fuel employed. Among those mentioned are alcohol, benzol, kerosene, and gasoline. Shortage in gasoline and increase in the price will undoubtedly cause a search for a new fuel. Its arrival is certain, as there has never been a crying demand for any improvement without an answer from the engineers and inventors. Improved carbureters and lighter cars show, in a way, the line of advance of improvements.

With the export demand, the war, and the domestic demand, there does not seem to be much thought of lower prices for gasoline. While kerosene could be used and would be cheap, it has, up to this time, exhibited a tendency to give off an odor when burned and it also

leaves an excess of carbon in the cylinders. The low grade of gasoline is a little more difficult to start on, but it supplies more heat and is a better fuel for general work after the motor is under way.

Some moderately successful attempts have been made in this respect, but, although the cost has been reduced to 7 cents per mile, a great deal of trouble exists because of the sediment left in the carbureter. This may, however, be remedied by study, and we may have a new less expensive fuel before long.

Thus the war has speeded up the development of the motor car, permanent improvements will result and, perhaps, a new fuel.

10. DEFECTS IN CONSTRUCTION BROUGHT OUT UNDER THE STRAIN OF ACTIVE-SERVICE CONDITIONS.

Lack of standardization of parts and the continual breaking of radiators are mentioned as being the main troubles encountered in handling this kind of transport. The last trouble undoubtedly comes from the shock due to bad roads and to continued use without an opportunity for repairs or rest.

For the student who has studied carefully the development of this transport the most gratifying thing about remodeling the proposition of modern warfare, made possible by the arrival of the motor vehicle, is the fact that every accomplishment and every success, up to date, stands to the credit of machines neither specially designed nor produced for war purposes.

WHEELS.

The wheels giving the most satisfaction are those in which a steel plate replaces the spokes, and where the dual tire is of solid rubber. This has been tried out in several trucks and found serviceable.

LIGHTING SYSTEM.

The "Prestolite" system was not serviceable nor satisfactory, and electric lighting found much better in every way. The feature reported on as being successful in every way was the movable headlight. It is of great use when loading and unloading at night and while off the main road and parking the machines. A good electric headlight arranged on a universal joint and within reach of the driver has been spoken of as an ideal arrangement.

BRIDGES.

Closely connected with the use of motor transport comes the importance of good roads, and next the question of bridges and a study of the means to be taken to strengthen the highway bridge ordi-

narily encountered in this country. Heavy ordnance, together with a continual stream of motor transport, will without doubt test the average highway bridge in many probable areas of operations. The development of heavy ordnance has called for the use of the motor in its transportation. There is plenty of information on hand to show that the transport of heavy ordnance, away from the railroad lines, has been accomplished by special motor vehicles.

11. RESULTS OF THE WAR.

The export of motor vehicles in the past two years has moved forward with a great bound. In 1915 it amounted to \$100,000,000, while in 1914 it was \$28,507,464, an increase of 250 per cent. The estimated value of commercial vehicles exported was \$63,000,000 of the total. England has been the best buyer of automobiles from the United States. Her purchases amounted, for the fiscal year ending June 30, to 5,306 trucks. France and Russia also were heavy purchasers. When the war ends there must needs be an immediate readjustment of the great industries of the belligerent countries. Hence it is believed that there will be left in the hands of many of our manufacturers trucks of the latest pattern. Why should we not use them to form the cadres for our divisional and Army transport, and accustom not only the troops but a number of officers and men with the use, handling, and repair of motor vehicles?

The following quotation, taken from a foreign motor publication, shows that this question has already been agitated in France:

Among the problems that are apt to come up at the close of the war in Europe is the means to be taken by the belligerent nations in disposing of the motor trucks now in use by the armies. France apparently has formed an answer to the question already. At an auction held recently, 740 of the Paris internal-gear drive omnibuses mobilized at the beginning of the war were sold, to be replaced by an equal number of similar chassis for work at the front. By selling these chassis at this time to private owners it was possible to forestall the purchase of that many chassis from neutral nations.

Another benefit to France is that this method of selling French trucks that have seen service prevents the beginning of an installation of foreign chassis by large owners who might after the war, in the interest of standardization, continue their purchases of trucks made outside of France.

The foreign trucks now used by the French Army are run until they are useless and can not be overhauled advantageously, and are then replaced by French-made chassis, the latest advices from France being that the factories there are now in a position to care for the army's needs.

12. CONCLUSIONS.

The question is at once asked whether or not we have taken steps to use this transport and to avail ourselves of the large amount of suitable material existing to-day in the United States.

The answer is made that this has been done as far as existing appropriations will allow. However, most of these vehicles are operating singly or in pairs, and at no one place are there sufficient for one company.

13. ORGANIZATION.

The organization proposed for a motor-truck company conforms to the experience of officers abroad, but as yet no attempt has been made to collect the material of automobile parks or for repair shops and these are shown by the experience of all to be badly needed in field operations.

The assignment of this transport to the divisional trains is correct and conforms with the practice abroad.

There should be organized in each division a motor-truck company, and attached thereto a repair shop. This organization will form a cadre as well as a place where chauffeurs and mechanics can be trained. It is true we can recruit plenty of men from this class when war is imminent, but it is one thing to be a chauffeur and another to be a military chauffeur.

Abroad this defect does not exist, but with us something should be done to remedy the lack of disciplined material. The experience of certain of the belligerents in this respect will be ours if we become involved in war.

14. COLLECTION OF THIS TRANSPORT.

Based on the type of vehicle *in use* in the cadre in each division, attempt ought to be made to arrange for a large number of vehicles *of a similar type*. The same type of vehicle, as far as possible, should be used within a division or even a field army if such can be accomplished.

The Federal Trade Commission could under the law obtain the data, in each divisional district, necessary for listing suitable transport. The Quartermaster General's Office has prepared a provisional plan for utilizing motor transport, under existing laws, and this plan includes a contract system which will take the place of the prizes and subsidies that have been found so efficacious abroad.

All these steps are in the right direction, and we have conserved the underlying principle for the use of mechanical-driven transport, and this is that it is a transportation unit pure and simple. It picks up a load at one place and discharges this load upon arrival at destination. It is not employed in transporting mobile reserves. The animal-drawn vehicle transports the rolling reserve. Animal-drawn vehicles are still being purchased in great numbers by the French. A recent order has been placed for over 4,000 of these wagons. The French have not as yet replaced the animal-drawn

transport of combat and field trains with autotrucks, nor do they apparently intend to do so. The corps supply, ammunition, and sanitary trains remain animal-drawn, except that automobile ambulance sections form part of the sanitary train, and fresh-meat automobile sections form part of the supply train.

The foregoing facts are striking when we consider the excellent roads being maintained in the theater of operations. The animal-drawn vehicle will undoubtedly be eventually replaced by mechanical-driven transport. However, before this can be done, even in Europe, many mechanical imperfections at present existing in the autotruck must be overcome. Our problem in this particular is more difficult than the European, when we consider the roads and bridges in our probable theater of military operations, and it is very possible that we will not be able to make the change until some time after it has been effected in Europe. Notwithstanding the fact that it may be some years before we can use autotrucks in our first and second lines of transportation, the fact remains that, in the event of a war, we will have need for this kind of transportation in great quantities behind our second-line transportation.

ORGANIZATION AND ADMINISTRATION OF THE WAR DEPARTMENT ADAPTED TO A CHANGE FROM PEACE CONDITIONS TO A STATE OF WAR

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
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ORGANIZATION AND ADMINISTRATION OF THE WAR DEPARTMENT ADAPTED TO A CHANGE FROM PEACE CONDITIONS TO A STATE OF WAR.

1. IMPORTANCE OF STAFF ORGANIZATION.

Report No. 74, House of Representatives, third session Forty-second Congress, contains the following:

To adjust and perfect the subtle and intricate machinery by which great masses of soldiers are to be fed, clothed, armed, moved, inspired with confidence, and carried through victorious battle is, after all, wrapped up in the perfection of staff organization.

2. STAFF ORGANIZATION SHOULD BE CAPABLE OF EXPANSION.

The classification of staff duties should be such that those of any branch can be promptly and efficiently discharged in time of war on a large scale. And unless we have an organization capable of expansion to an almost unlimited extent we may well question whether it rests upon a safe basis.

3. EXPANSION REQUIRES USE OF DETAIL SYSTEM AND UNCOMPLICATED STAFF SERVICE.

In order that we may make the great expansion referred to, which is especially necessary in this country, we must have available in addition to the authorized number of staff officers a large number who have had some experience in staff duties, and should have a staff system which is not unnecessarily complicated.

The number of officers trained for staff service, except in the Medical Corps, should be made as large as practicable by the detail system. Besides this being necessary for the required expansion of our staff service in case of war, it is otherwise beneficial to the service. In a hearing before a committee of Congress Gen. Sherman approvingly quoted Van Moltke's statement to the effect that in the German Army "every staff officer is required for a considerable period of his life to serve with soldiers." (P. ix, H. Rept. No. 74, 42d Cong., 3d sess.) This would increase the number of officers trained in staff service and diminish the number without experience with troops.

4. MORE IMPORTANT TO PREPARE STAFF ORGANIZATIONS FOR WAR THAN FOR PEACE.

It is more important that we have good staff service in war than in peace. If keeping officers continuously in staff departments promotes efficiency of staff service in time of peace, it might do so at the expense of efficiency of staff service when war comes. This especially applies in this country, where staff officers sometimes leave their departments for line service in time of war. During the War with Spain the President appointed 40 per cent of the officers of one staff department general officers of Volunteers. (P. 122, S. Doc. No. 221, 56th Cong., 1st sess.) Even if it should require some additional staff officers in time of peace, the organization and administration of staff departments should be such as to insure efficient staff service during war. The less complicated our staff service the more practicable it would be to expand the staff departments with officers of little previous service therein.

5. WAR EXPERIENCE CONDEMNS MERGING STAFF DUTIES.

It was stated by the commander of the forces that British staff service was less efficient in the Boer War because of merging the duties of different staff departments. (London Times, Sept. 11, 1906.) In Gen. Longstreet's testimony for a committee of Congress, March 4, 1872, he stated:

The pay and quartermaster's duties were united in the same department in the Confederate service. It was not a success * * *. The duties and disbursements of the Quartermaster's, Commissary, Pay, and Medical Departments are sufficiently burdensome and complicated when kept as separate departments. (P. 34, H. Rept. 74, 42d Cong., 3d sess.)

The Inspector General of the Army, March 5, 1872, testified for a committee of Congress:

The consolidation of the Quartermaster's, Subsistence, and Pay Departments into one supply department can not, in my opinion, be effected without manifest detriment to the efficiency and economy of all. (P. 23, H. Rept. No. 74, 42d Cong., 3d sess.)

The Committee on Military Affairs, House of Representatives, after extensive inquiry of many officers of great experience in the Civil War, reported that in view of—

the testimony adduced from the most respectable authority, it is fair to conclude that the consolidation of any of the different staff corps and departments with another is inexpedient. Whatever might be gained in expense in time of peace would possibly and probably be lost in war, when a divided responsibility, as at present, would become necessary, and might devolve upon inexperienced hands. (P. iv, H. Rept. No. 74, 42d Cong., 3d sess.)

Referring to the Quartermaster's Department, the report of the commission appointed by the President to investigate the conduct of the War Department in the War with Spain contains the following:

There appears to have been a lack of system whereby, even as late as October (1898), troops in camp and in the field were lacking in some articles of clothing, camp and garrison equipage; and hospitals, at least at two important localities in the South—Fort Monroe, Va., and Huntsville, Ala.—lacked stores, while at Huntsville fuel was wanting.

There appears to have been a lack of executive or administrative ability, either on the part of the Quartermaster's Department or the railroad officials, in preventing the great congestion of cars at Tampa and Chickamauga when these camps were first established, which congestion caused delay, annoyance, and discomfort to the large bodies of troops concentrating at those places.

There appears to have been a lack of foresight in preparing and promptly having available at some central locality on the seacoast the necessary fleet of transports which it seemed evident would be required for the movement of troops to a foreign shore, and, finally, when the call came suddenly and the emergency was supreme, the department appears not to have fully comprehended the capacity of the fleet under its command; not to have supplied it with a complete outfit of lighters for the immediate disembarkation of troops and supplies; to have accepted without full investigation, the statement that the vessels were capable of transporting 25,000 men, while really they could not and did not transport more than 17,000 with their artillery, equipments, ammunition, and supplies, and lacked sufficient storage room for the necessary amount of wagon transportation—that very important element in the movement of an army in the face of an enemy.

* * * * *

Finally, in the opinion of this commission, there should be a division of the labor now devolving upon the Quartermaster's Department. * * *.

Experience—war experience—has thus shown that a consolidation of the Quartermaster's Department, Pay Department, and Subsistence Department into one department—the Quartermaster Corps—is not an organization adapted to a change from peace conditions to a state of war.

6. PART OF THE WORK DONE IN THE JUDGE ADVOCATE GENERAL'S OFFICE SHOULD BE DONE IN THE ATTORNEY GENERAL'S OFFICE.

The official report of the conduct of the War of 1898 states with reference to the Judge Advocate General's Department:

About one-half of the time of this office was occupied in civil matters such as preparing contracts, examining titles, etc. (S. Doc. No. 221, 56th Cong., 1st sess.)

The Attorney General's Office should attend to the legal work pertaining to civil matters.

7. THE ARMY SHOULD HAVE A CHIEF OF INFANTRY, A CHIEF OF CAVALRY, AND A CHIEF OF FIELD ARTILLERY.

After receiving testimony from officers of great experience in the Civil War, the Committee on Military Affairs, House of Representatives, stated:

A suggestion, not without weight, is made that there should be three additional staff officers at Army headquarters or with the Secretary of War. These are a chief of Artillery, a chief of Cavalry, and a chief of Infantry, whose specialties shall be to look after the interests of each particular arm, whose knowledge and skill would inspire confidence, and whose character would give authority to his declarations upon the subject intrusted to his care. (P. iv, H. Rept. No. 74, 42d Cong., 3d sess.)

Under modern conditions it is necessary to efficiency that every arm of the service have a chief at the War Department. This was advocated in War College Division memorandum 639-103, 1915.

8. NECESSITY FOR A GENERAL STAFF.

The commission on the conduct of the War with Spain reported:

In the judgment of the commission there was lacking in the general administration of the War Department during the continuance of the War with Spain that complete grasp of the situation which was essential to the highest efficiency and discipline of the Army. (P. 116, S. Doc. No. 221, 56th Cong., 1st sess.)

The remedy Congress applied was to establish a General Staff, which the experience of all military countries has shown to be necessary to prevent such inefficiency.

9. ORGANIZATION AND ADMINISTRATION OF THE GENERAL STAFF.

The opinion of the majority of the War College division as to the proper organization and administration of the War Department adapted to a change from peace conditions to a state of war, so far as the General Staff is concerned, is shown in Appendix L; the opinion of a minority in Appendix M.

10. ORGANIZATION AND ADMINISTRATION OF OTHER PARTS OF THE WAR DEPARTMENT.

Subject to what has been stated in the preceding part of this memorandum, the organization and administration of the other parts of the War Department adapted to a change from peace conditions to a state of war are shown in Appendixes A to K, inclusive.

APPENDIX A.

2338208.

W. C. D. 9262-2.

WAR DEPARTMENT,
THE ADJUTANT GENERAL'S OFFICE,
Washington, November 12, 1915.

From: The Adjutant General of the Army.

To: The Secretary of War.

Subject: Organization and administration of The Adjutant General's Office.

The following is submitted in compliance with a memorandum of the Chief of Staff, dated November 2, 1915, conveying your direction that, for use in considering organization and administration of the War Department, adapted to a change from peace conditions to a state of war, there be submitted the following regarding the War Department organization and administration:

(a) A statement of the present War Department organization and administration of the respective bureaus, corps, or departments of the War Department.

(b) A statement of the peace organization and administration of the respective bureaus, corps, or departments of the War Department considered best adapted to a change from peace conditions to a state of war.

In addition to The Adjutant General there are five officers of The Adjutant General's Department on duty in this office.

The number of civilian employees now authorized by law for The Adjutant General's Office is 579. Of these, 483 are clerical and 96 subclerical employees. Their distribution by grades is shown in the following table:

Grade.	Annual salary.	Number.	Grade.	Annual salary.	Number.
Chief Clerk.....	\$2,250	1	Firemen.....	\$720	2
Chiefs of division.....	2,000	10	Skilled mechanic.....	1,000	1
Clerks:			Messengers.....	840	10
Class IV.....	1,800	48	Assistant messengers.....	720	54
Class III.....	1,600	64	Watchmen.....	720	8
Class II.....	1,400	94	Laborers.....	660	18
Class I.....	1,200	231	Messenger boy.....	360	1
At \$1,000.....	1,000	35			
Engineer.....	1,400	1	Total.....		579
Assistant engineer.....	900	1			

The clerical force of the office is distributed as follows:

General office administration, including Military Academy business (Administrative Division).....	13
Recording, indexing, and dispatching correspondence and searching and reporting from correspondence files, 1800 to date (Mail and Record Division).....	98
Business relating to commissioned officers, examining, recording and furnishing information from Army returns; preparing Monthly Army List and Directory, and leave lists (Officers' Division).....	42
Business relating to enlisted men (Enlisted Men's Division).....	14
Business relating to the recruiting service (Recruiting Division).....	14
Miscellaneous Army correspondence (Miscellaneous Division).....	22
Publishing Army orders, changes, and bulletins; distributing Army blanks, orders, changes, bulletins, Army List and Directory, etc. (Orders and Distribution Division).....	21
Examining, furnishing information from, and conducting correspondence relating to, Army rolls, enlistment papers, descriptive and assignment cards, and other papers relating to enlisted men of the Regular Army; classifying and searching identification records of enlisted men of the Regular Army (Rolls Division).....	63
Business relating to the disbanded armies of all wars, to the organizations, officers and enlisted men composing those armies, and to former officers and enlisted men of the Regular Army (Correspondence and Examining Division).....	41

Searching and furnishing information from the medical records, Regulars and Volunteers, 1814 to date, and from the volunteer regimental records, 1776 to 1901; repairing records, and custody of duplicate records and records rarely consulted (Medical and Volunteer Regimental Records Division)-----	38
Searching and furnishing information from records of discontinued geographical commands, armies, corps, divisions, etc.; from the records of the Provost Marshal General's Bureau, Office of Commissary General of Prisoners, Bureau of Refugees, Freedmen and Abandoned Lands, and other discontinued bureaus and offices of the Civil War period, and from the Confederate archives; preparing a compilation showing the geographical and tactical organizations, engagements, and casualties of the Union and Confederate Armies (Archives Division)-----	32
Carding records of the Confederate Army in the process of compilation of the Complete Roster of the Officers and Enlisted Men of the Union and Confederate Armies, authorized by act of Feb. 23, 1903 (32 Stat. L., 884); searching and furnishing information from the military card files of the War with Spain and the Philippine insurrection (Tenth Street Division)-----	85
Total clerical-----	483
Subclerical employees-----	96
Aggregate-----	579

The present organization of the office is such that it can be expanded readily from peace conditions to a state of war by the addition of a sufficient number of clerks and the provision of any additional room needed. In case of war or other disturbance requiring the use of an increased military force it would be necessary to suspend, as far as practicable, noncurrent work, using the clerks engaged thereon for current work until such additional force as might be needed were authorized and obtained. It probably would be necessary to divide the force into two "shifts," each composed in part of trained men, with a view to use the limited office space available for one "shift" during the daytime and for the other during the evening or night. This is believed to be the best plan to place and handle an additional force of at least 300 employees, the lowest number it is thought will be needed in case of war.

It is thought that the needs of the office in the way of additional employees that may be rendered necessary by Army legislation, now under consideration in the War Department, should be also considered at this time. If the proposed plan of Army reorganization, including the establishment of a continental army, is enacted into law, the work of The Adjutant General's Office will be materially increased, and it will be impossible for the force now provided by law to do that work. The matter of detail of more officers of The Adjutant General's Department for duty in The Adjutant General's Office can be disposed of without further legislation, but provision should be made by law for a sufficient clerical force to dispose of any increase in clerical work resulting from Army legislation.

It is impossible to make any estimate in advance of legislative action that will be at all reliable with regard to the volume of work that will result from Army legislation. It is believed, however, that at least 100 additional clerks will be needed as soon as—and some of them before—that legislation is completed. Applications for appointment as officers and requests for information on all subjects relating to the Army will begin to pour into the office as soon as congressional consideration of that legislation is begun, and immediately upon its passage measures must need be taken for carrying it into effect by establishing such new organizations as may be provided—obtaining the additional enlisted men by recruiting, commissioning officers provided for, and such other work as may be necessary.

Under the present legal allowance of clerks for The Adjutant General's Office only 2.3 per cent of the clerical employees receive salaries of \$2,000 and

over, while in the rest of the department 5.1 per cent are paid \$2,000 or more. Of the clerical employees at salaries of \$1,000 or less The Adjutant General's Office has 55.1 per cent, as compared with 53.9 for the rest of the department. Clerks of Class I (\$1,200) constitute 47.9 per cent of The Adjutant General's clerical force, while that grade has only 32.2 per cent in the balance of the department.

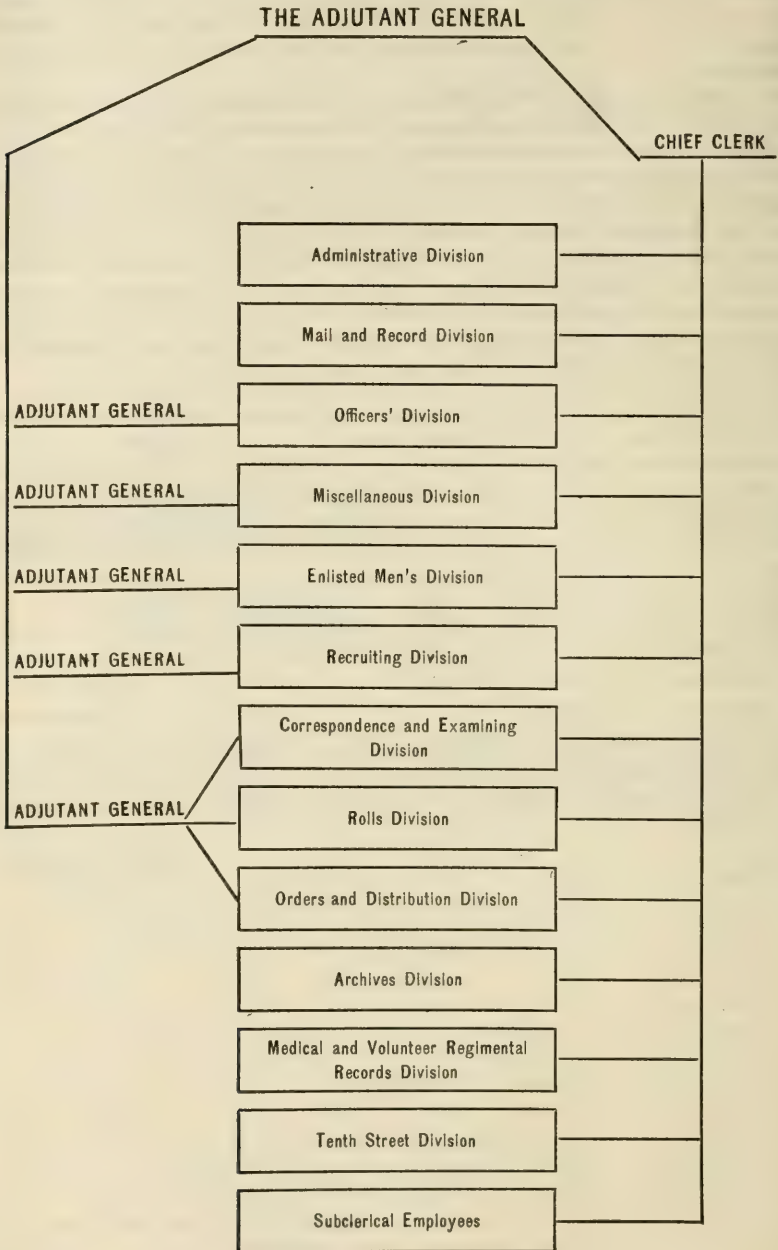
The large percentage in the \$1,200 grade in The Adjutant General's Office has constituted a "block" to promotions, so that a service of many years is necessary before a clerk can look for promotion to the next higher grade (\$1,400). This leads many clerks that have been trained in the work of the office to seek transfers to other bureaus or offices where promotions are more rapid, or to leave the Government service entirely. To avoid this block in the line of promotions and to provide salaries commensurate with the responsibility of those in supervisory positions and to more nearly equalize the percentage of higher grades in this office with those in the other bureaus in the War Department, it is suggested that the following classification of employees, which includes the 100 proposed to be added, be recommended for legislative consideration:

Grade.	Number.	Salary.	Remarks.
Chief clerk.....	1	\$2,750	Increase of \$500 submitted.
Assistant chief clerk.....	1	2,500	In lieu of 1 chief of division at \$2,000.
Chiefs of division.....	7	2,250	In lieu of 7 chiefs of division at \$2,000.
Clerks at \$2,000.....	15	2,000	In lieu of 2 chiefs of division at \$2,000 and 13 clerks, Class IV.
Clerks:			
Class 4.....	58	1,800	Increase of 10 submitted.
Class 3.....	68	1,600	Increase of 4 submitted.
Class 2.....	116	1,400	Increase of 22 submitted.
Class 1.....	257	1,200	Increase of 26 submitted.
Class \$1,000.....	60	1,000	Increase of 15 submitted.
Total clerical.....	583	.....

The foregoing proposition, if adopted, will add \$140,150 to the amount to be appropriated for salaries for The Adjutant General's Office. This will make the total appropriation for salaries for that office \$865,020, instead of \$724,870, as at present.

H. P. McCain.

The present organization of the office is shown graphically in the following diagram:



APPENDIX B.

182-G-1.

WCD 9262-3.

WAR DEPARTMENT, OFFICE OF THE INSPECTOR GENERAL,
Washington, November 5, 1915.

From: The Inspector General of the Army.

To: The Adjutant General.

Subject: Organization and administration of the Inspector's General's Office.

1. In reply to letter from The Adjutant General's Office of November 3, 1915 (2338208), the following is submitted:

(a) The present organization and administration of this bureau is shown in statement inclosed herewith (incl. 1).

(b) Under war conditions the character of the duties performed in this office would not change. The present organization is adaptable to war conditions.

The only difference in war would be the increase in volume of work incident to having more troops in the field to be inspected and thereby increasing the number of reports coming into the office.

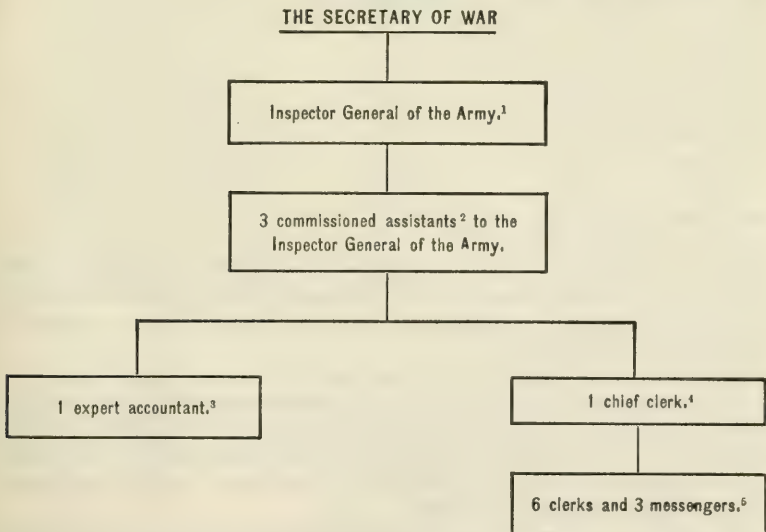
This increase of paper work would require an increase in the clerical force and might require, in addition, commissioned assistants for each of the officers now in the office.

The number of additional officers and clerks can not be determined definitely, in the absence of definite knowledge of the character and extent of operations to be undertaken and the size of the force to be employed.

In the Spanish-American War the clerical force was temporarily increased from 8 to 16.

A. W. BREWSTER,
Acting Inspector General.

ORGANIZATION AND ADMINISTRATION OF THE OFFICE OF THE INSPECTOR GENERAL OF
THE ARMY.



¹ His duties are advisory as regards the Secretary of War and the Chief of Staff, and supervisory as regards the Inspector General's Department, of which he is the head.

² They examined all reports of inspections and miscellaneous papers received in the office of the Inspector General of the Army, and suggest the action to be taken thereon by this office. In addition to the above, the assistants to the Inspector General perform the following duties outside of the office:

³ He examines inspections of money accounts, and matters pertaining to the funds, etc.

⁴ He supervises the clerical work of the office.

⁵ Correspondence and record work.

Inspection.—Of money accounts and property in Washington, D. C.; the National Home for Disabled Volunteer Soldiers; certain depots, arsenals, armories, schools, hospitals, etc., not under department commanders; the tactical inspection of the Field Artillery throughout the Army are specially made by the Field Artillery inspector on duty in this office, who is included in the three commissioned assistants mentioned above.

Special investigations.—These officers are required to make such investigations as are ordered by the Secretary of War and the Chief of Staff.

APPENDIX C.

AGO 2338208.

WCD 9262-5.

[First indorsement.]

WAR DEPARTMENT,
JUDGE ADVOCATE GENERAL'S OFFICE,
Washington, November 10, 1915.

To the ADJUTANT GENERAL:

1. Returned. In the foregoing letter of the 3d instant The Adjutant General requests (a) a statement of the present organization and administration of this bureau, and (b) a statement of the peace organization and administration of this bureau considered best adapted to a change from peace conditions to a state of war, by November 15, 1915, for consideration in connection with the organization and administration of the War Department.

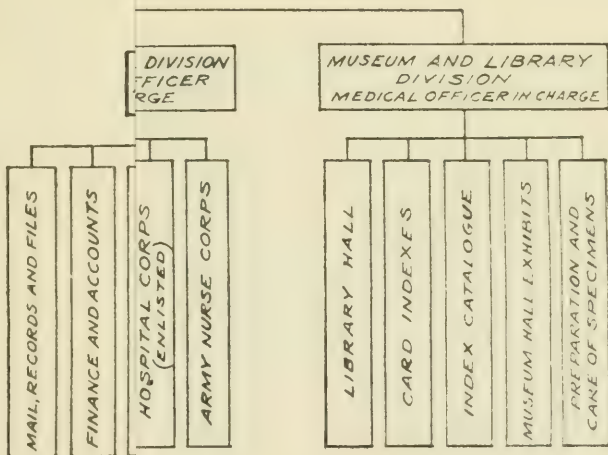
2. As to (a) the organization of the Judge Advocate General's office is as follows:

- (a) Judge Advocate General, with the rank of brigadier general.
- (b) 1 assistant, with the rank of lieutenant colonel.
- (c) 2 assistants, with the rank of major.
- (d) 3 assistants, with the rank of captain—detailed.
- (e) 1 law student with the rank of lieutenant.
- (f) 1 chief clerk and solicitor.
- (g) 2 law clerks.
- (h) 1 clerk, class IV.
- (i) 2 clerks, class III.
- (j) 3 clerks, class II.
- (k) 6 clerks, class I.
- (l) 1 copyist at \$900.
- (m) 2 messengers.
- (n) 1 assistant messenger.

On account of the character of the legal work of the Bureau of Insular Affairs, the law officer of that bureau, with a clerk and an assistant messenger, have desk room and perform their duties in this office and under the supervision of the Judge Advocate General.

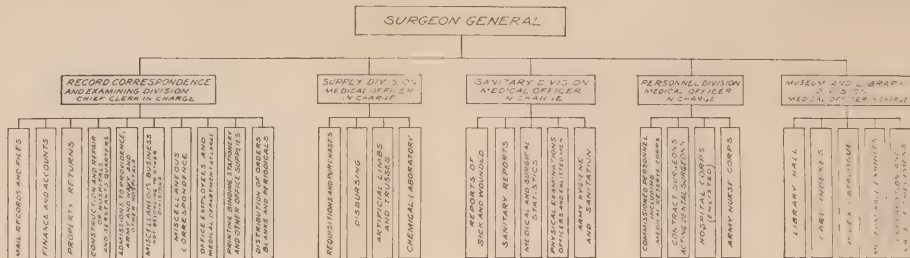
3. With respect to (b), it is believed that the present organization of the bureau is best adapted to a change from "peace conditions to a state of war," as it can readily absorb such additional force as may be necessary to perform its increased duties incident to such a change, and the amount of such additional force that would be necessary in the event of said change would depend upon the size of the Army engaged in the war.

E. H. CROWDER, *Judge Advocate General.*



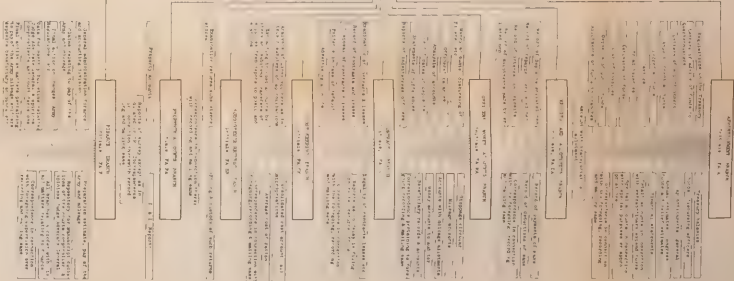
NOV. 1921 AMM.

CHART
SHOWING ORGANIZATION OF THE
OFFICE OF THE SURGEON GENERAL

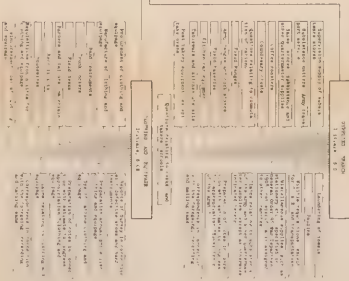


· GENERAL

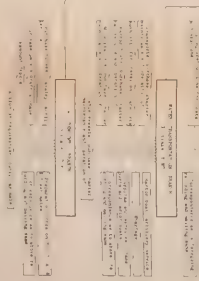
FINANCE &
ACCOUNTING
DIVISION



SUPPLIES
DIVISION



CONSTRUCTION
& REPAIR
DIVISION

TRANSPORTATION
DIVISION.

APPENDIX D.

A.G.O. 2338208-H.

W.C.D. 9262-10.

WAR DEPARTMENT,

OFFICE OF THE QUARTERMASTER GENERAL OF THE ARMY,

Washington, November 13, 1915.

No.: 022.1-Ad.

From: Quartermaster General.

To: The Adjutant General of the Army.

Subject: War Department organization and administration.

1. Referring to letter from The Adjutant General of November 3, 1915 (No. 2338208), on subject as above, the following report is submitted:

(a) Graphic chart submitted herewith shows organization of the Office of the Quartermaster General in detail.

(b) The organization as shown in the chart is the present organization and would remain the same, except that in the event of war it would be necessary to assign additional officers as assistants to officers in charge of the Supplies and Transportation Divisions of the office to handle the work of these divisions, which would of necessity be materially increased. It would also be necessary, in the event of hostilities, to increase the clerical force of the office.

2. With the exception of the addition of a limited number of officers and an increase of the clerical force as set forth above, the organization as shown in the accompanying chart is, in the judgment of the undersigned, adapted to both peace and war conditions.

J. B. ALSESHIRE,

Quartermaster General.

APPENDIX E.

145136, 4a.

W.C.D. 9262-9.

A.G.O. 2338208-G.

WAR DEPARTMENT,

OFFICE OF THE SURGEON GENERAL,

Washington, November 13, 1915.

From: Surgeon General.

To: The Adjutant General.

Subject: War Department organization and administration.

1. Replying to your call of the 3d instant for information as to organization and administration of the War Department adapted to a change from peace conditions to a state of war, I would report as follows:

(a) A chart is inclosed showing the present organization and administration in this bureau. The clerical force of the office, at this time consisting of chief clerk, law clerk, and 93 clerks of classes IV, III, II, I, \$1,000 and \$900, are distributed among the several divisions as conditions of business require. (In the event of an increase in the authorized strength of the Army, the present clerical force will not be sufficient to efficiently and expeditiously handle the increased business consequent thereupon, and while the present organization of the office need not be changed, it is estimated that the clerical force will have to be increased 25 per cent to insure accuracy and promptness in the dispatch of business.)

(b) The present organization and administration of the bureau is well adapted to a change from peace conditions to a state of war, and no change

therein can now be foreseen; all that would seem to be necessary in the event of war would be to increase the number of officers and employees eventually to about double the number provided for when the changed conditions occur.

H. C. FISHER,
Lieutenant Colonel, Medical Corps, Acting Surgeon General.

APPENDIX F.

99380 AGO 2338208-J

WCD 9262-12

WAR DEPARTMENT,
 OFFICE OF THE CHIEF OF ENGINEERS,
Washington, November 13, 1915.

From: The Chief of Engineers.

To: The Adjutant General.

Subject: War Department organization and administration.

1. In compliance with letter from The Adjutant General, dated November 3, 1915, upon the above subject (A. G. O. 2338208), I submit herewith a statement of the present organization of the Engineer Bureau, with suggested changes to prepare it better for war conditions. It is assumed that the inquiry relates not only to the organization of the Engineer Bureau in the War Department proper, but is intended to include also the Engineer Department at Large, which is an essential portion of the Engineer Bureau in war as well as in peace.

2. Table 1 gives the organization of the Engineer Bureau of the War Department proper, including the Board of Engineers for Rivers and Harbors, which by law is a part of the Office of the Chief of Engineers, but which has offices elsewhere in Washington than in the War Department Building.

3. Table 2 gives in a brief outline the organization of the Engineer Department at Large, which carries on fortification construction work, river and harbor work, and other miscellaneous civil work.

4. Table 3 gives the organization of certain matters connected with military affairs or furnishing military supplies under the jurisdiction of the Chief of Engineers, outside the War Department proper, and yet not connected with the construction or supervisory work of the Engineer Department at Large.

5. There is omitted from these tables all reference to Engineer troops and to the Department of Engineers, the control of which comes within the jurisdiction of the commanding generals of the military departments.

6. It is believed that in general, and except for the minor changes noted below, the organization above referred to is fairly well suited to a state of war or a transition from a state of peace to a state of war.

7. As far as the organization of the Engineer Bureau within the War Department is concerned, no change is suggested as necessary to prepare for a state of war other than the probable necessity of an increase in personnel in the Office of the Chief of Engineers in the division connected with military affairs. The services of an additional officer and additional clerical assistants would be absolutely necessary during the stages of war or immediately preceding, and will not improbably become necessary in any event in case of the adoption by Congress of the proposed reorganization of the Army, involving an increase in the number of Engineer troops and, more important still, a large increase in the amount of Engineer material to be supplied to troops of the line and to be kept in reserve. This increase in personnel will require additional office space.

8. In so far as concerns the organization of the Engineer Department at Large, no change is considered desirable or advisable. In time of war or in the period immediately preceding it is probable that a considerable portion of the trained office and field forces now engaged in the construction of river and harbor and other civil works could and would be, with more or less complete organizations, transferred to work of a military character where needed, such as seacoast and land fortifications and purchase and inspection of engineer equipment and supplies for mobile and seacoast purposes. The availability for such military work in time of war of such a trained construction force already organized and at work under the jurisdiction of the Chief of Engineers is considered of inestimable value.

9. As I have stated above, I consider no change necessary in the organization of the Engineer Department at Large in so far as it relates to duties performed under the Chief of Engineers, but all division Engineers and district Engineer officers are for certain purposes placed by Army Regulations or War Department instructions under the jurisdiction of the department commanders, and for most of these purposes it is believed that such regulations are just, right, and proper. However, amongst the subjects placed within the jurisdiction of the department commanders is that of the preparation of plans for the construction of land fortifications and the complete control of the preparation for the construction of such land defenses.

10. It is understood that the district Engineer officers are expected to have in their offices complete plans of all these defensive works, with the detailed scheme for carrying them out, and that this arrangement is to be carried to the extent of providing a separate envelope for each foreman or overseer, containing plans of the work to be done by him and directions for carrying out these plans. The district Engineer officers are supposed to keep in touch with the question of local supply of labor and materials, etc., all outside of the jurisdiction of the Chief of Engineers and without any coordination with their primary duties or with other Engineer districts.

11. It is believed that the above arrangement, in so far as it separates the construction end of such work from the observation and supervision of the Chief of Engineers, is a serious mistake. The amount of work of this character to be done in the early stages of war is, according to existing plans, enormous. The length of time in which it is supposed to be done is very small, and any attempt to accomplish this requires the most complete organization. At such times the district Engineer officers having charge of these land fortifications would probably in every case have charge also of emergency seacoast fortification work, made possible by sudden availability of long-needed funds, and the capacity of their offices, both as regards the office and field forces, would be overtaxed and the local labor markets would probably, in some cases at least, be exhausted.

12. On the other hand there are a number of inland Engineer offices engaged entirely in civil work, and it would be entirely practicable, in the early part of a war, to transfer portions of the trained office and field forces of such inland offices to the works of seacoast fortifications and land fortification of the seacoast harbors. Such transfers are considered absolutely essential to prevent seacoast Engineer districts being swamped with work.

13. Were all matters connected with the construction of such land fortifications for the protection of seacoast forts within the jurisdiction of the Chief of Engineers, as is the case with all other construction work of a civil or military character, the office of the Chief of Engineers would be able in time of peace to make definite plans and arrangements for the transfer of such working forces and for the coordination of all work under the Engineer Department.

14. It is therefore considered essential to a proper preparation for such emergency work that the Chief of Engineers should have jurisdiction over the construction of such land-fortification work, and that not only should he be permitted but he should be required to keep in his office copies of all plans connected with the construction of the land defense of seacoast fortifications, and that all communications from the War Department to district engineer officers on such matters should pass through his hands. It is considered advisable also that he be furnished with copies at least of papers passing between department commanders and the local district officers.

15. It is not intended by these suggestions to interfere with the initiative of the department commanders, either in designing or in modifying plans for these defenses, but merely to suggest that on account of the great magnitude of the work required in the early stages of a war and of the rapidity with which it must be done a complete cooperation between all branches of the Engineer Department is essential and can not be assured unless the Chief of Engineers is given jurisdiction over such matters as recommended above.

16. In so far as it relates to the organization of the Engineer School and Engineer depots, no general modifications are suggested for preparation in time of war, except that, if the new scheme of Army reorganization is accepted by Congress, the purchase and storage of the large stock of reserve material contemplated thereby makes essential an increase in the number of Engineer officers now engaged in Engineer depot work, and that such of these officers as are now performing other functions in addition to depot work will probably have to be relieved of those other functions by other officers.

17. No change is proposed in the organization of the Engineer School, as it is not improbable that, at least in the early stages of the war, the functions of the Engineer School will practically cease, and the instructors and student officers pertaining to the school will be available for other details.

DAN C. KINGMAN,

Chief of Engineers, United States Army.

TABLE I.—*Organization of the Engineer Bureau of the War Department.*

	Com- mis- sioned per- sonnel.	Assist- ant engi- neers.	Blue- print opera- tors.	Draft- men.	Junior engi- neers.	Law officer.	Cler- ical force.	Mes- sengers and labor- ers.
Chief of Engineers.....	1							
1. General administration, Office Chief of Engi- neers:								
1. Chief clerk.....							40	13
2. Military section (including per- sonnel).....	2	1					11	
3. Rivers and harbors section.....	2	2		6			9	
4. Miscellaneous civil section.....	1	1				1	5	
5. Accounts and con- tracts section.....	2						21	
6. Drafting section.....		1	2	2	2		1	
7. Board of Engineers for Rivers and Harbors (com- prises 7 officers of the Corps of En- gineers, of whom all but 1 are ac- counted for else- where).....	1	1		1			2	1
Total.....	9	6	2	9	2	1	89	14

TABLE II.—Organization of the Engineer Department at Large.

Fortifications, rivers and harbors, and miscellaneous civil works:

Engineer Department at Large—

9 divisions (5 of the division engineers have also district duties).

57 districts, 49 district officers (3 of whom now have 2 districts each).

25 military assistants.

Civilian employees, approximately 25,000.

TABLE III.—Engineer School, Engineer depots, etc.

	Commissioned force.		Civilian employees.
	In charge.	Assistants.	
1. Engineer School (student officers not included).....	1	2	10
2. Engineer depots:			
1. Washington Barracks.....	1	1	45
2. Fort Leavenworth (officer in charge also director Army Field Engineer School).....	1	.....	2
3. Vancouver Barracks (officer in charge also in command of Company F, Second Battalion of Engineers).....	1	.....	.....
4. Honolulu (officer in charge accounted for elsewhere).....	.....	.....	45
5. Manila (officer in charge also department Engineer Philippine Department).....	1	.....	48
Total under "Miscellaneous duties exclusively military".....	5	3	150

APPENDIX G.

AGO 2338208

WCD 9262-11

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ORDNANCE,
Washington, November 12, 1915.

From: The Ordnance Office.

To: The Adjutant General of the Army.

Subject: War Department organization and administration.

1. Replying to your letter of November 3, 1915, A. G. O. 2338208 (O. O. 321.8-1), concerning the War Department organization and administration of the Ordnance Department, the following is submitted:

2. The present War Department organization and administration of the Ordnance Office is as follows:

I. Administration:

(a) General correspondence.

(b) Arsenal administration and personnel.

(c) Civil-service matters; appointments and changes of status of employees.

II. Finance and property division:

(a) Financial transactions affecting the entire department, and also the militia in so far as ordnance supplies are concerned.

(b) Property accountability.

(NOTE.—Supply is handled by the divisions enumerated below, each controlling the material whose manufacture it directs.)

III. Small arms and equipment division:

(a) Small arms.

(b) Personal and horse equipment.

(c) Small-arms and machine-gun target practice.

(d) Supply of rifle clubs and schools.

IV. Gun division:

- (a) Seacoast cannon.
- (b) Mobile artillery cannon.
- (c) Ammunition—
 - 1. Powder.
 - 2. Primers.
 - 3. Fuses.
 - 4. Projectiles.
 - 5. High explosives.
- (d) Grenades, serial bombs.
- (e) Miscellaneous cannon and projectiles for special uses.
- (f) Seacoast artillery target practice.
- (g) Mobile artillery target practice.

V. Carriage division:

- (a) Seacoast gun carriages and the optical and fire-control instruments pertaining thereto.
- (b) Mobile artillery carriages and vehicles, and the optical and fire-control instruments pertaining thereto.
- (c) Machine guns.
- (d) Pack outfits—mountain and machine.
- (e) Tractors and armored automobiles.
- (f) Maintenance of installed and mobile artillery material.

3. The organization given in the preceding paragraph is considered satisfactory for the peace organization and administration of this office, and best adapted to pass from peace to war conditions. No change in this organization would be required to pass from peace to war conditions, it being simply a question of expansion.

WILLIAM CROZIER,
Brigadier General, Chief of Ordnance, United States Army.

 APPENDIX H.

40726.

[First indorsement.]

WAR DEPARTMENT,
OFFICE OF CHIEF SIGNAL OFFICER,
Washington, November 6, 1915.

TO THE ADJUTANT GENERAL, UNITED STATES ARMY:

Inclosing diagram showing present organization and administration of this bureau. This organization and administration is considered adapted to a change from peace conditions to a state of war by the addition of one division to handle matters of personnel and a reasonable increase of the clerical force, depending on the size of the military forces to be organized.

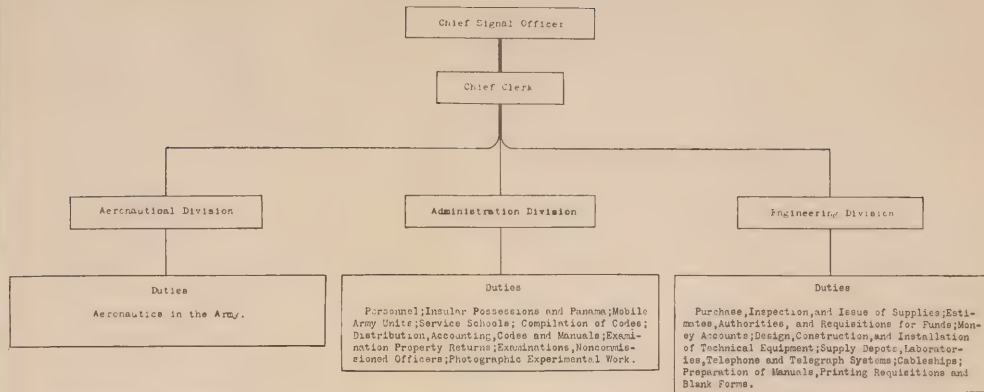
CHARLES S. WALLACE,
Captain, Signal Corps, in charge of Office.

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graph TD; A[ ] --- B[Engineering Division]; B --- C[Duties];
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Engineering Division

Duties

e, Inspection, and Issue of Supplies; Estimates, and Requisitions for Funds; Monitors; Design, Construction, and Installation of Equipment; Supply Depots, Laborator-hone and Telegraph Systems; Cableships; on of Manuals, Printing Requisitions and ms.



APPENDIX I.

AGO 2338208.

WCD 9262-7.

WAR DEPARTMENT,
BUREAU OF INSULAR AFFAIRS,
Washington, November 12, 1915.

From: Bureau of Insular Affairs.

To: The Adjutant General of the Army.

Subject: War Department organization and administration.

1. In compliance with the request contained in letter from your office of the 3d instant (No. 2338208), the following information is submitted:

(a) As at present organized, the Bureau of Insular Affairs consists of the Correspondence and Administrative Division; Purchasing, Disbursing, and Accounts Division; Record Division; Miscellaneous Division; and Statistical Division. The chief clerk of the bureau, under the immediate direction of the chief and assistants to the chief of bureau, has direct supervision over the Correspondence and Administrative Division, which handles all current business and correspondence. Through the Purchasing, Disbursing, and Accounts Division all supplies bought in the United States for the governments of the Philippine Islands and Porto Rico are purchased, and accounts therefor audited and paid. The Record Division is the depository of the official records and correspondence of the bureau. The Miscellaneous Division collects and compiles information of all kinds obtainable relating to matters under the supervision of the bureau. The Statistical Division collects and prepares for publication commercial and trade statistics of the insular possessions whose affairs are administered under the supervision of the bureau.

(b) The present organization and administration of the bureau is fully adapted to a change from peace conditions to a state of war.

FRANK MCINTYRE, *Chief of Bureau.*

APPENDIX J.

CA 5871/568-A.

WCD 9262-8.

AGO 2338208-F.

WAR DEPARTMENT,
OFFICE OF CHIEF OF STAFF,
Washington, November 12, 1915.

From: Acting Chief of Coast Artillery.

To: The Adjutant General.

Subject: Organization of the Coast Artillery Division.

1. The following diagrammatic statement shows the organization and administration of this division:

Chief of Coast Artillery—senior assistant—charged with supervision and co-ordination of office, administration, mine material, boats, general subjects:

1. Assistant (1): Subjects relating to fire control, fortifications, light and power, and searchlights.
2. Assistant (1): Subjects relating to personnel, barracks and quarters, miscellaneous.

3. Assistant (1) : Subjects relating to target practice, ammunition, instruction, inspection reports.
4. Assistants (2) : Subjects pertaining to estimates, expenditures, requisitions, new fortification projects, armament matériel data.
2. The present organization of this division is considered well adapted for the accomplishment of the functions of this division under both peace and war conditions.

RICHMOND P. DAVIS,
Colonel, Coast Artillery Corps, Assistant to Chief of Coast Artillery,
In charge Coast Artillery Division

APPENDIX K.

WCD 9262-6.
AGO 2338208-D.

WAR DEPARTMENT, OFFICE OF THE CHIEF OF STAFF,
DIVISION OF MILITIA AFFAIRS,
Washington, November 12, 1915.

From: The Acting Chief, Division of Militia Affairs.

To: The Adjutant General.

Subject: War Department organization and administration.

1. Referring to communication of the 6th instant, the following is submitted:
“(a) A statement of the present War Department organization and administration of your bureau.”

There is attached a diagram showing the organization and administration of the Division of Militia Affairs existing at this date. The normal organization, however, provides for three additional clerks and provision therefor is made in the estimates for the fiscal year 1917.

“(b) A statement of the peace organization and administration of your bureau, considered best adapted to a change from peace conditions to a state of war.”

The peace organization of the office is that shown in the diagram under (a), with the following additional officers which it is contemplated will be required as the divisional organization of the Organized Militia is perfected, and the 12 divisions are completely organized:

One officer (captain, Field Artillery), as assistant to the officer in charge of matters pertaining to the organization and instruction of the Field Artillery personnel of the Organized Militia.

One officer (captain of Infantry), in charge of matters pertaining to the organization and instruction of machine-gun units of the Organized Militia.

It is not contemplated that the peace organization and administration will be changed in the event of war except that 12 additional stenographers would be required.

2. The following is submitted in this connection:

On the outbreak of war the office will be flooded and business interfered with by a stream of applicants for commissions.

Numerous telegrams, letters, and personal inquiries will be received concerning the actual procedure in connection with mobilization. These communications can be greatly reduced in number, if not anticipated entirely, by the issue beforehand of comprehensive instructions for mobilization, and the solving

all
of camps
ons of
ulations,
the
on be-
rtaining

Assistant to the Chief
of Division
Lieutenant Colonel,
Infantry.

In charge of matters
pertaining to the or-
ganization and instruc-
tion of the Infantry
personnel of the
Organized Militia.

Assistant to the Chief
of Division
Captain, Infantry (Signal
Corps.)

In charge of matters
pertaining to the or-
ganization and instruc-
tion of signal corps and
machine-gun organiza-
tions of the Organized
Militia and matters of
personnel relating to
sergeant-instructors.

Assistant to the Chief
of Division
First Lieutenant, In-
fantry.

Assistant to the offi-
cer in charge of matters
pertaining to the orga-
nization and instruction
of the infantry personnel
and in charge of matters
pertaining to target
practice of the Organized
Militia.

Comptrol Section

One chief of section and five
Chief Clerks examine reports of
performances of small-arms firing
returns of strength;
the business statistical matter
mand under al report of the Chief,
chief of ion on the Organized
a requisitions for
the Division, and ex-
t on survey proceedings
accounts and returns.

Blank Room

One clerk and one
messenger, who will
make distribution of
general orders, bul-
letins, circulars,
blank forms, etc., to
the Organized Mili-
tia.

PEACE ORGANIZATION AND ADMINISTRATION OF THE OFFICE OF THE CHIEF, DIVISION OF MILITIA AFFAIRS

Chief of S. v. plan.

Brigadier General, General Staff.

[illegible]

Ex. 1. Let $x = 2$, $y = 3$, $z = 4$. Then $x + y + z = 9$.

[illegible]

of mobilization problems in each State as a part of the armory course of instruction.

Circular No. 19, this office, 1914, provides a *normal* organization of the Organized Militia called into the United States service. As each special emergency for which troops are needed will present its own special features, constituting in itself a new problem, it is practically certain that the normal organization will have to be extensively modified. In addition to the actual making out of a modified organization schedule, it will be necessary to consider the political claims of applicants for commissions as well as their just claims in view of their efficiency records.

The activities referred to above will furnish employment at first for 12 additional stenographers. After the first month the amount of work should fall off rapidly. At the end of the second month the work should be reduced to about that handled in time of peace.

Subsequent to this period, while the work of this division will not entirely cease, nevertheless, assuming that the status of the greater part of the Organized Militia will have been changed to that of United States Volunteers, all matters relating to the organization, instruction, training, and equipment of the organizations so converted which are now the principal peace activities of this division will be handled by the General Staff and the several supply bureaus of the War Department concerned. Under this assumption it is thought that the division could then be administered by a chief of division and three assistants, and 50 per cent of the number of clerks required for the peace-time administration. The assistants could very well be officers detailed from the retired list of the Army. The clerks rendered surplus by the reduction in the volume of work would be available for transfer to other bureaus of the War Department.

G. W. McIVER, *Colonel, Infantry.*

APPENDIX L

Proposed organization of the General Staff on duty at the War Department.

	Lieutenant general.	Major general.	Brigadier general.	Colonel.	Lieutenant colonel.	Major.	Captain.	Total.
Chief of Staff.....	1							1
Secretary to Chief of Staff.....					1			1
Assistant Chief of Staff, chief of division.....		2	2					4
Secretary of division.....						4		4
First division:								
I. Section on operations.....				1	1	2	1	5
Total for section.....				1	1	2	1	5
II. Section on organization and equipment—								
Chief of section.....				1				1
Infantry committee.....						1	1	2
Field Artillery committee.....						1	1	2
Cavalry committee.....						1	1	2
Coast Artillery committee.....						1	1	2
Technical troops committee.....						1		1
Communication and supply.....							1	1
Total for section.....				1		5	5	11
III. Section on mobilization—								
Chief of section.....				1				1
Regular Army committee.....					1		1	2
Citizen soldiery committee.....						1	2	3
Total for section.....				1	1	1	3	6
IV. Section on training—								
Chief of section.....					1			1
Infantry committee.....						1	1	2
Field Artillery committee.....						1	1	2
Cavalry committee.....						1	1	2
Coast Artillery committee.....						1	1	2
Technical troops committee.....						1	1	2
Total for section.....					1	5	5	11
V. Information section—								
Chief of section.....					1			1
Committee on France, Italy, Switzerland, Spain, Portugal, and Belgium.....							1	1
Committee on Germany, Austria, Holland, Turkey, and Balkan States.....							1	1
Committee on Russia, Norway, Sweden, and Denmark.....							1	1
Committee on China and Japan.....						1		1
Committee on South America.....							1	1
Committee on England and her colonies.....							1	1
Total for section.....					1	1	5	7
Total for first division.....				3	4	14	19	40
Second division:								
VI. Financial section—								
Chief of section.....				1				1
Regular Army committee.....						1	1	2
Citizen soldiery.....						1	1	2
Reserve supplies.....						1	1	2
Total for section.....				1		3	3	7
VII. Section on transportation—								
Chief of section.....				1				1
Atlantic coast committee.....						1	1	2
Mexican border committee.....						1	1	2
Pacific coast committee.....						1	1	2
Central States committee.....						1	1	2
Over-sea transportation.....						1	1	2
Total for section.....				1		5	5	11
Total for second division.....				2		8	8	18

Proposed organization of the General Staff on duty at the War Department—Continued.

	Lieutenant general.	Major general.	Brigadier general.	Colonel.	Lieutenant colonel.	Major.	Captain.	Total.
Third division:								
VIII. Section—Survey—								
Chief of section.....				1				1
Atlantic States committee.....						1	1	2
Southern States committee.....						1	1	2
Pacific States committee.....						1	1	2
Central States committee.....						1	1	2
Total for section.....				1		4	4	9
IX. Section on printing and issue—								
Map-printing committee.....							1	1
Issue committee.....							1	1
Total for section.....							2	2
X. Section on foreign maps.....						1	1	2
Total for section.....						1	1	2
Total for third division.....				1		5	7	13
Fourth division:								
XI. Section—Educational—								
Education of general staff officers.....					2	2		4
Military schools, colleges, and universities committee.....						1	4	5
Total for section.....					2	3	4	9
XII. Section—Historical.....						1	2	3
Total for section.....						1	2	3
Total for fourth division.....					2	4	6	12
Total General Staff (War Department).....	1	2	2		1	4		10
First division.....				3	4	14	19	40
Second division.....				2		8	8	18
Third division.....				1		5	7	13
Fourth division.....					2	4	6	12
Total War Department General Staff.....	1	2	2	6	7	35	40	92
General Staff with troops:								
For each Infantry division, Regular Army.....				1		1	1	3
For each Cavalry division, Regular Army.....				1			2	3
For each Infantry division, continental army.....				1		1	1	3
For each Cavalry division, continental army.....				1		1	1	3
For each geographical department.....				1				1
For the Philippine department.....				1	1	1	1	4
For the Hawaiian department.....				1	1	1	1	4
For Panama.....				1	1	1	1	4

ORGANIZATION OF THE GENERAL STAFF AS LISTED IN APPENDIX L.

This organization contemplates that five general officers, namely, one Chief of Staff and four Assistant Chiefs of Staff, be assigned to duty with the General Staff in Washington.

The Assistant Chiefs of Staff are respectively in charge of the first, second, third, and fourth divisions into which the General Staff is divided. The Chief of Staff and the four Assistant Chiefs of Staff to form a board of direction for the General Staff.

FIRST DIVISION.

The First Division consists of five sections, namely, section of operations (war plans), section of organization and equipment, section of mobilization,

section of training, and section of military information (study of foreign armies).

The section on operations would take the place of the present war-plans committee of the General Staff and would have general charge of preparing plans of offense and plans of defense to be used in event of hostilities. It would also be charged with determining the number of troops required to properly defend the United States from foreign invasion.

The second section—section on organization and equipment—would have general supervision and the drawing up of plans for the organization and equipment of the armies found necessary by the section on operations for the proper defense of this country. This section is divided up into subcommittees, each one of which is to handle the questions affecting the organization and equipment of their respective arms. The committee on communication and supply would handle all questions pertaining to organization and equipment of the troops of the lines of communication and supply.

The third section—section on mobilization—is divided into two committees, one of which would have charge of drawing up the plans of mobilization in accordance with the general principles enunciated by the section on operations of the Regular Army or first-line troops; another committee would have charge of the details of mobilization of the citizen soldiery (continental army and militia), or second-line troops.

The fourth section—section on training—would consider all questions affecting the training of the individual arms of the service independently, as well as of joint training. It would also have general supervision over the drill regulations and other pamphlets of instruction pertaining to the general training of the Army.

The fifth section—section on military information—will study organization, tactics, drill regulations, equipment, and everything pertaining to foreign armies and should be in position at all times to give any information needed by any of the other sections of the General Staff on foreign armies.

Owing to shortage of General Staff officers it is at the present time practically impossible to compile the mass of information that has been sent to the War College Division by our observers abroad, so that we are not in a position to take full advantage of the lessons to be derived from the present European war, and the reason for this is lack of personnel.

SECOND DIVISION.

The Second Division consists of the finance section and the transportation section.

Finance section. Based upon a preliminary general investigation of the administration and methods of estimating for funds of the several departments of the Government the President in a message to Congress, dated March 3, 1911, said:

* * * * * *

“Estimates of departmental needs have not been the subject of thorough analysis and revision before submission; budgets of receipts and expenditures have been prepared and presented for consideration of Congress in an unscientific and unsystematic manner; appropriation bills have been without uniformity or common principle governing them; * * * *appropriations have been overencumbered without the facts being known*; * * * functions and establishments have been duplicated, even multiplied, causing conflict and unnecessary expense; * * *.”

The finance section will be the means by which the Chief of Staff will exercise intelligent supervision over the preparation of the annual estimates. This

section will analyze and systematize the estimates of the bureau and departments, thus enabling the Chief of Staff to submit to the Secretary of War well-balanced estimates, calculated to secure the maximum military efficiency at the least possible expenditure of public funds. In the performance of this duty the section will eliminate from the estimates any items not essential for military effectiveness, and will incorporate therein any additional items necessary to effect the desired results. This analysis and revision will insure against duplication of either funds or functions and will result in estimates being submitted for only those articles which, with parts on hand or provided for in the same estimates, will constitute complete units of equipment or armament.

When, as is usually the case, the amount that will be appropriated is less than the total of the estimates, this section will be prepared to indicate where the necessary reductions can be made with the least loss of efficiency.

The personnel indicated in Appendix L for this section is the minimum that can perform the work efficiently.

Transportation section. It will be the duty of the transportation section to prepare plans for the orderly transportation in the least possible time of troops and supplies from mobilization points to all possible theaters of operation. The section will have to prepare accurate data with respect to all transportation systems in, or having a terminus in the United States, that is at all likely to be used in war and must take measures to insure that this data are at all times kept up to date.

The section must at all times be prepared to state just how long it will take to concentrate any given number of troops at any critical point, the transportation equipment necessary for the movement, and the routing that should be adopted to accomplish the movement most efficiently and with the least amount of hardship to the troops concerned.

Most of the work of this section will of necessity have to be performed in time of peace when opportunity for careful and intensive study is present, but its activities would continue in time of war when the rapidly changing conditions would render its services indispensable. The general staff of practically every nation of Europe contains such a section and the relatively larger territorial extent of the United States renders the section of even greater importance in our Army. The number of officers indicated in Appendix L is believed to be the minimum that can perform the duties of the section in a satisfactory manner.

THIRD DIVISION.

Survey and Map Division. This division is divided into three committees. At the present time we have not on file up-to-date maps of a great portion of this country, and in fact a great deal of it has not been mapped at all. We are dependent for our war maps more or less upon the Coast and Geodetic Survey and the Geological Survey. From a military point of view these maps are not as accurate and efficient as they should be, and the method of determining what areas shall be mapped has never been made to accord with any set military policy.

At the present time if a State does not choose to appropriate money for the purpose of paying part of the expense of having its area mapped, the Geological Survey will not map it. In other words, the question of whether or not an area shall be mapped is determined by financial considerations and not from any military necessity.

Not to have efficient maps is an extremely great handicap to any army, and although a State may not appropriate money to enable its area to be mapped, still, from a military point of view, it may be essential for us to have good maps

of that State not only for the salvation of that State itself but also for the protection of the States which surround it.

FOURTH DIVISION.

This division broadly corresponds to the present War College and the educational section of the General Staff as they exist at present.

It is divided into two committees, one of which is charged with the supervision of the policy to be followed in the education of General Staff officers, the other committee has general supervision and determination of the policy to be followed in the military schools, colleges, and universities of the country.

The historical section of the General Staff is also attached to this division.

APPENDIX M.

[Officers not above grade of colonel to be attached as necessary. The attached officers are not to be members of the General Staff Corps.]

General Staff Corps.

	Lieutenant general.	Major general or brigadier general.	Colonel.	Lieutenant colonel.	Major.	Captain.	Total.
Chief of Staff.....	1						1
Assistant Chiefs of Staff.....		2					2
Secretary, General Staff.....			1				1
Assistant secretary, General Staff.....					1		1
Executive officers of General Staff divisions.....			2				2
First division:							
I. Section—Organization, training, and equipment.....			1	6	6	12	25
II. Section—Mobilization and operations.....			1	2	4	8	15
III. Section—Financial.....			1	1	2	5	9
IV. Section—Miscellaneous.....					1	4	5
Second division:							
I. Section—Educational.....				2	2	5	9
II. Section—Information.....			1	2	4	8	15
III. Section—Historical.....					1	2	3
IV. Section—Miscellaneous.....					1	4	5
Total War Department General Staff.....	1	2	7	13	22	48	93
General Staff serving with troops:							
For the three existing divisions.....			3		3	3	29
For the existing cavalry division.....			1			2	23
For our four territorial departments in United States.....			4				4
For Philippine department.....			1	1	1	1	34
For Hawaiian department.....			1	1	1	1	34
For Panama garrison.....			1	1	1	1	34
Total General Staff serving with troops.....			11	3	6	8	28
Total General Staff Corps.....	1	2	18	16	28	56	121

¹ The committees of Section I, First Division, might be:

	Colonel.	Lieutenant colonels.	Majors.	Captains.
Chief of section.....	1			
Infantry committee.....		1	1	2
Cavalry committee.....		1	1	2
Field Artillery committee.....		1	1	2
Coast Artillery committee.....		1	1	2
Technical troops committee.....		1	1	2
Communication and supply committee.....		1	1	2

² These figures are in accord with the tables of organization.

³ There is and should be the additional General Staff officer included here for the information bureau in each foreign command. During peace, General Staff officers serving with troops should be utilized, as far as they can be spared, to assist in organizing and training citizen soldiers.

1. ORGANIZATION, TRAINING, AND MOBILIZATION OF
A FORCE OF CITIZEN SOLDIERY
2. METHOD OF TRAINING A CITIZEN ARMY ON THE
OUTBREAK OF WAR TO INSURE ITS PREPARED-
NESS FOR FIELD SERVICE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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SYNOPSIS.

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1. ORGANIZATION, TRAINING, AND MOBILIZATION OF A FORCE OF CITIZEN SOLDIERY.—2. METHOD OF TRAINING A CITIZEN ARMY ON THE OUTBREAK OF WAR TO INSURE ITS PREPAREDNESS FOR FIELD SERVICE.

1. RELATION OF THE TWO SUBJECTS.

In the Statement of a Proper Military Policy for the United States, prepared in the War College Division of the General Staff (par. 42), it is asserted that the force of citizen soldiers "should be prepared to take the field immediately on the outbreak of war, and should have had sufficient previous military training to enable it to meet a trained enemy within three months. Twelve months' intensive training is the minimum that will prepare troops for war service. Therefore, the 500,000 partly trained troops require nine months' military training before war begins." The first subject covers the organization, the nine months' training and the mobilization of these troops prior to the outbreak of war. The second subject refers to the continuation of this training for three months after the outbreak of war to fit the partially trained troops to meet a trained enemy. The two subjects are so closely related that it is thought best to consider them together in one paper.

2. GUIDE FOR THE STUDY OF THE SUBJECTS.

The Statement of Military Policy, dated September, 1915, has been taken as a guide in considering length of enlistment, numbers, organization by years, etc. Modifications made in other reports to the Secretary of War have been disregarded. The enlistment period has therefore been taken as eight years, three with the colors and five on furlough, and the enlisted strength required as 500,000 men. If it should be considered desirable to reduce the enlistment period to six years, it would only be necessary to cut the time on furlough from five to three years. If it should be decided to have but 400,000 men in this force, a 20 per cent reduction in numbers will be necessary.

The war strength of units, as given in the Tables of Organization, 1914, has been used in all calculations, except that for the first year the legal maximum of 150 men for Infantry companies and 100 men for Cavalry troops has been allowed to provide for the men later taken for machine-gun and headquarters companies. It is recognized that changes in the Tables of Organization are desirable, and will probably be made as a result of legislation recommended. For instance, the War College Division has recommended, and the Secretary of War, it is understood, has approved the addition of a machine-gun company to each regiment of Infantry and Cavalry, a headquarters company, and a supply company to each regiment of Infantry, Cavalry, and Field Artillery, and three regiments of

Field Artillery, a regiment of Engineers, and an aero squadron for a division; but, as these changes have not yet been confirmed by law, or the issue of orders, it is thought best at present to base calculations on the only authoritative publication we have, the Tables of Organization. When the continental army is authorized by law, the figures will have to be changed to conform to the numbers and organization therein prescribed.

3. ORGANIZATION.

In the study of the organization of this force, the numbers given in the table in the Epitome, Military Policy, dated July 10, 1915, have been taken as a basis, viz, 185,000 recruits required each year; strength of continental army, 185,000 the first year, 351,500 the second year, 500,000 the third and subsequent years.

In deciding on the apportionment of the given strength each year among the different branches of the service, a field army consisting of three Infantry divisions, one Cavalry division, one brigade (two regiments) of Heavy Field Artillery, one pontoon battalion of Engineers, and one aero squadron of the Signal Corps was taken as a basis. In such a force the percentage of different arms of the service are nearly as follows: Infantry, 63; Cavalry, 14; Field Artillery, 13 (divided proportionally into light, horse, and heavy field artillery); Engineers, 3; Signal Corps, 1; Quartermaster Corps, 2; Hospital Corps, 4.

As recommended in the Statement of a Proper Military Policy, companies only have been organized the first year, battalions the second year, and regiments the third year.

No attempt has been made to organize the part of the continental army on furlough. This can easily be done later, if a law authorizing a continental army is passed, and the experiment proves a success during its first three years of trial.

The result of the study on organization is shown in Tables A, B, C, D, which with their notes are believed to be self-explanatory.

4. TABLE A.—*Estimates of numbers.*

	Recruits required.	Number organized at begin- ning of training season.	Number on fur- lough at beginning of year.	Reserve officers with con- tinental army.	Extra Reg- ular offi- cers for continental army.	Total re- serve offi- cers if men on fur- lough are organized.
First year.....	¹ 185,000	185,000	.....	² 4,625	³ 462	4,625
Second year.....	185,000	351,500	.....	⁴ 9,842	879	9,842
Third year.....	185,000	500,000	.....	⁵ 16,000	1,250	16,000
Fourth year.....	185,000	500,000	134,865	⁶ 18,000	1,250	³ 22,855
Fifth year.....	185,000	500,000	256,244	18,000	1,250	27,225
Sixth year.....	185,000	500,000	365,485	18,000	1,250	30,077
Seventh year.....	185,000	500,000	464,802	18,000	1,250	34,733
Eighth year.....	185,000	500,000	553,287	18,000	1,250	37,918

¹ Allows for a loss of 10 per cent each year.

² 2.5 per cent of enlisted strength for company officers.

³ Taken from table in Epitome of Military Policy.

⁴ 2.8 per cent of enlisted strength for battalion officers.

⁵ 3.2 per cent of enlisted strength for regimental officers.

⁶ 3.6 per cent of enlisted strength for organization into divisions, etc.

5. TABLE B.—*Organization for first three years.*

	First year.	Second year.	Third year.
Recruits required for continental army	185,000	185,000	185,000
Numbers in continental army beginning training	185,000	351,500	500,000
Infantry, 63 per cent of total strength	116,550	221,445	315,000
Infantry companies ¹	793		
Infantry battalions ¹		395	
Infantry regiments			171
Cavalry, 14 per cent of total strength	25,900	49,210	70,000
Cavalry troops ¹	265		
Cavalry squadrons ¹		136	
Cavalry regiments			56
Field Artillery, 13 per cent total strength	23,050	45,695	65,000
Light artillery batteries ¹	89		
Horse artillery batteries	14		
Heavy field artillery batteries	25		
Light artillery battalions		57	
Horse artillery battalions		9	
Heavy field artillery battalions		25	
Light artillery regiments ²			38
Horse artillery regiments			6
Heavy field artillery regiments			12
Engineers, 3 per cent of total	5,550	10,545	15,000
Pioneer companies	22		
Pioneer companies, mounted	8		
Ponton companies, light equipment	3		
Ponton companies, heavy equipment	6		
Pioneer battalions ²		14	19
Pioneer battalions, mounted		5	6
Pontoon battalions		5	8
Signal Corps, 1 per cent of total	1,850	3,515	5,000
Wire companies	8		
Radio companies	8		
Headquarters companies (Cavalry Signal battalion)	3		
Radio companies (Cavalry Signal battalion)	3		
Aero companies	5		
Field battalions ²		14	19
Field battalions, cavalry		5	6
Aero squadrons		5	10
Hospital Corps, 4 per cent of total	7,400	14,060	20,000
Instruction companies, 74 men each ³	100	121	
On duty with other troops		5,071	6,396
Ambulance companies			94
Field Hospital companies			63
Quartermaster Corps, 2 per cent of total ¹	3,700	7,030	10,000
Assigned to duty with organizations			9,495
Under instruction in quartermaster work			505

¹ For the first two years the allowance of Quartermaster Corps men are trained as additional infantry, cavalry, and field artillery units, with a view to having men with some training and discipline for transfer to the Quartermaster Corps when they are needed for attaching to larger organizations.

² In the third year the numbers of regiments of field artillery and battalions of engineers and signal corps are apportioned with a view to assignment to infantry and cavalry divisions and field armies.

³ In the apportionment of the Hospital Corps, the allowance is divided the first year into instruction companies; the second year, proportional parts of regimental allowances are attached to battalions and the remainder divided into instruction companies; in the third year the number of ambulance companies and field hospital companies needed for future divisions are organized.

6. TABLE C.—Officers first three years.

	Colonels.	Lieutenant Colonels.	Chaplains.	Majors.	Captains.	First lieutenants.	Second lieutenants.	Totals.
FIRST YEAR.								
793 Infantry companies.....					793	793	793	2,379
265 Cavalry troops.....					265	265	265	795
89 batteries light artillery.....					89	178	178	445
14 batteries horse artillery.....					14	28	28	70
25 batteries heavy field artillery.....					25	50	50	125
Total field artillery.....					128	256	256	640
Engineers:								
22 pioneer companies.....					22	44	22	88
8 pioneer companies, mounted.....					8	8	8	24
3 ponton companies, light equipment.....					3	6	3	12
6 ponton companies, heavy equipment.....					6	12	6	24
Total engineers.....					39	70	39	148
Signal Corps:								
8 wire companies.....					8	16		24
8 radio companies.....					8	16		24
3 headquarter companies, Cavalry battalion.....					3	6		9
3 radio companies, Cavalry battalion.....					3	6		9
5 aero companies.....					15	30		45
Total Signal Corps.....					37	74		111
Medical Corps:								
100 instruction companies.....					100	200		300
Quartermaster Corps:								
Under instruction.....					92			92
Total.....					1,454	1,654	1,353	4,461
SECOND YEAR.								
395 Infantry battalions.....				395	1,580	1,580	1,580	4,135
136 Cavalry squadrons.....				136	544	544	680	1,904
57 battalions light artillery.....				57	228	342	399	1,026
9 battalions horse artillery.....				9	36	54	63	162
25 battalions heavy field artillery.....				25	75	100	125	325
Total Field Artillery.....				91	339	496	587	1,513
Engineers:								
14 pioneer battalions.....				14	56	98	42	210
5 pioneer battalions, mounted.....				5	25	20	15	65
5 ponton battalions.....				5	20	35	15	75
Total Engineers.....				24	101	153	72	350
Signal Corps:								
14 field battalions.....				14	28	70		112
5 field battalions, Cavalry.....				5	10	25		40
5 aero squadrons.....				5	30	65		100
Total Signal Corps.....				24	68	160		252
Medical Corps:								
121 instruction companies.....					121	242		363
With troops.....					214	93		307
Total Medical Corps.....					335	335		670
Total.....					670	2,967	3,268	9,824
THIRD YEAR.								
171 Infantry Regiments.....	171	171	171	513	2,565	2,565	2,565	8,721
56 Cavalry Regiments.....	56	56	56	168	840	840	840	2,856
38 Regiments Light Artillery.....	38	38	38	76	418	494	494	1,596
6 Regiments Horse Artillery.....	6	6	6	12	66	78	78	252
12 Regiments Heavy Field Artillery.....	12	12	12	36	144	156	168	540
Total Field Artillery.....	56	56	56	124	628	728	740	2,388

6. TABLE C.—Officers first three years—Continued.

	Colonels.	Lieutenant Colonels.	Chaplains.	Majors.	Captains.	First lieutenants.	Second lieutenants.	Totals.
THIRD YEAR—continued.								
Engineers:								
19 pioneer battalions.....				19	76	133	60	288
6 pioneer battalions, mounted.....				6	30	24	18	78
8 ponton battalions.....				8	32	56	24	120
Total Engineers.....				33	138	213	102	486
Signal Corps:								
19 field battalions.....				19	38	95		152
6 field battalions, cavalry.....				6	12	30		48
10 aero squadrons.....				10	60	130		200
Total Signal Corps.....				35	110	255		400
Medical Corps:								
Duty with other troops.....				283	343	461		1,087
Total.....	283	283	283	1,156	4,651	5,116	4,247	16,019
Medical Corps for duty with Divisional Troops—94 Ambulance Companies and 63 Field Hospital Companies.....				107	220	565		

NOTE.—Quartermaster Corps officers under instruction not counted in totals in second and third years.

7. TABLE D.—Fourth to eighth years.

Organizations.	Officers.				Enlisted men.	
	Combatant.	Medical.	Chaplains.	Totals.	Infantry.	Cavalry
19 Infantry divisions.....	11,780	1,786	228	13,794	313,956	23,484
6 Cavalry divisions.....	2,898	306	42	3,246		44,496
Available for field armies:						
1 regiment Cavalry.....	50	3	1	54		1,236
12 regiments Heavy Field Artillery.....	528	36	12	576		
8 ponton battalions, Engineers.....	120	8		128		
10 aero squadrons, Signal Corps.....	200	10		210		
Total.....	15,576	2,149	283	18,008	313,956	69,216

Organizations.	Enlisted men.					
	Field Artillery.	Engineers.	Signal Corps.	Hospital Corps.	Quartermaster Corps.	Totals.
19 Infantry divisions.....	42,864	9,386	3,097	15,694	10,602	419,083
6 Cavalry divisions.....	6,768	1,620	978	2,688	1,998	58,548
Available for field armies:						
1 regiment Cavalry.....				16	32	1,284
12 regiments Heavy Field Artillery.....	14,640			228	300	15,168
8 ponton battalions, Engineers.....		3,952		32	72	4,056
10 aero squadrons, Signal Corps.....			900	30	10	940
Total.....	64,272	14,958	4,975	18,688	13,014	499,079

NOTE 1.—With full allowance of Quartermaster Corps men with organizations its numbers amount to 2.6 per cent of total, while for other arms the numbers are a little below the percentages heretofore given.

8. PRINCIPLES GOVERNING DISTRIBUTION.

Being closely connected with organization and a necessary preliminary to recruiting, training, and mobilization, the distribution of the force must be decided upon. The distribution here recommended is made in accordance with the following principles:

1. The units of each Infantry and Cavalry division should, in order to facilitate mobilization and supervision of training, be located in contiguous territory. This idea is carried out by dividing the country into 25 divisional areas, of which 19 are assigned for Infantry divisions and 6 for Cavalry divisions.

2. The troops should be distributed approximately in proportion to population. The only political or geographical subdivisions within the United States made on the basis of population are congressional districts. These districts can, therefore, be used as a convenient unit in forming divisional areas. There are 414 such districts in the United States, an average of between 16 and 17 districts per area. In the following grouping all areas are given 16 or 17 districts, except one each of 15, 18, and 19.

3. The population within each divisional area should be of such a character as to furnish suitable men for the different branches of the service. This is accomplished by having within each area urban sections, rural sections, colleges with technical courses, and by assigning to the Cavalry divisions sections where horses can be obtained and the population is accustomed to their use.

9. DIVISIONAL AREAS.

First Infantry divisional area.—All of Maine, New Hampshire, and Vermont and the sixth, seventh, eighth, ninth, tenth, eleventh, twelfth, and fourteenth congressional districts of Massachusetts. Total, 16 districts. Headquarters, Boston, Mass.

Second Infantry divisional area.—The first, second, third, fourth, fifth, thirteenth, fifteenth, and sixteenth congressional districts of Massachusetts; all of Rhode Island and Connecticut. Total, 16 districts. Headquarters, Providence, R. I.

Third Infantry divisional area.—The first to seventeenth congressional districts of New York. Total, 17 districts. Headquarters, New York City.

Fourth Infantry divisional area.—The eighteenth to thirty-fourth congressional districts of New York. Total, 17 districts. Headquarters, Albany, N. Y.

Fifth Infantry divisional area.—The thirty-fifth to forty-third districts of New York and the tenth, eleventh, fourteenth, fifteenth, sixteenth, twenty-first, twenty-sixth, and twenty-eighth districts of Pennsylvania. Total, 17 districts. Headquarters, Buffalo, N. Y.

Sixth Infantry divisional area.—The sixth, seventh, eighth, ninth, twelfth, thirteenth, seventeenth, eighteenth, nineteenth, twentieth, twenty-second, twenty-third, twenty-seventh, twenty-ninth, thirtieth, thirty-first, and thirty-second districts of Pennsylvania. Total, 17 districts. Headquarters, Pittsburg, Pa.

Seventh Infantry divisional area.—The first to fifth districts of Pennsylvania; all of New Jersey. Total, 17 districts. Headquarters, Philadelphia, Pa.

Eighth Infantry divisional area.—All of North Carolina and South Carolina. Total, 17 districts. Headquarters, Charleston, S. C.

Ninth Infantry divisional area.—All of Florida, Georgia, and the third district of Tennessee. Total, 16 districts. Headquarters, Atlanta, Ga.

Tenth Infantry divisional area.—All of Alabama and Mississippi. Total, 17 districts. Headquarters, Birmingham, Ala.

Eleventh Infantry divisional area.—The twenty-fourth and twenty-fifth districts of Pennsylvania; the seventh, eighth, tenth to twenty-first districts of Ohio. Total, 16 districts. Headquarters, Cleveland, Ohio.

Twelfth Infantry divisional area.—The first to sixth and the ninth districts of Ohio; the first to ninth districts of Indiana. Total, 16 districts. Headquarters, Cincinnati, Ohio.

Thirteenth Infantry divisional area.—The tenth to thirteenth districts of Indiana; all of Michigan. Total, 16 districts. Headquarters, Detroit, Mich.

Fourteenth Infantry divisional area.—All of Wisconsin and the first, tenth, eleventh, twelfth, and thirteenth districts of Illinois. Total, 16 districts. Headquarters, Milwaukee, Wis.

Fifteenth Infantry divisional area.—The first to sixth, eighth, ninth, seventeenth, eighteenth, nineteenth, twenty-second to twenty-fifth districts of Illinois. Total, 15 districts. Headquarters, Chicago, Ill.

Sixteenth Infantry divisional area.—All of Minnesota, North Dakota, South Dakota, and Montana. Total, 17 districts. Headquarters, Minneapolis, Minn.

Seventeenth Infantry divisional area.—All of Louisiana, Oklahoma, and the first, second, third, and fourth districts of Texas. Total, 17 districts. Headquarters, New Orleans, La.

Eighteenth Infantry divisional area.—The fifth to sixteenth districts of Texas, all of New Mexico, Arizona, Utah, and Nevada. Total, 17 districts. Headquarters, San Antonio, Tex.

Nineteenth Infantry divisional area.—All of California, Oregon, Idaho, and Washington. Total, 19 districts. Headquarters, San Francisco, Cal.

First Cavalry divisional area.—All of Delaware, Maryland, and Virginia. Total, 17 districts. Headquarters, Baltimore, Md.

Second Cavalry divisional area.—All of West Virginia and Kentucky. Total, 16 districts. Headquarters, Louisville, Ky.

Third Cavalry divisional area.—All of Tennessee, except the third district; all of Arkansas. Total, 16 districts. Headquarters, Memphis, Tenn.

Fourth Cavalry divisional area.—All of Iowa, the fourteenth, fifteenth, sixteenth, twentieth, and twenty-first districts of Illinois. Total, 16 districts. Headquarters, Des Moines, Iowa.

Fifth Cavalry divisional area.—All of Missouri. Total, 16 districts. Headquarters, St. Louis, Mo.

Sixth Cavalry divisional area.—All of Kansas, Nebraska, Colorado, and Wyoming. Total, 17 districts. Headquarters, Omaha, Nebr.

10. TABLE E.

Organizations in Infantry divisional areas.	First Infantry divisional area.			Second Infantry divisional area.			Third Infantry divisional area.		
	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.
Infantry.....	41	20	9	41	20	9	42	21	9
Cavalry.....	5	3	1	5	2	1	5	2	1
Artillery:									
Light.....	5	3	2	5	3	2	5	3	2
Heavy.....	2	2	1				2	2	1
Engineers:									
Pioneer.....	2	1	1	2	1	1	1	1	1
Ponton.....					1	1	2	1	1
Signal Corps:									
Field.....	1	1	1	1	1	1			1
Aero.....	1	1	1				1	1	1
Hospital Corps:									
Instruction companies...	4	5	1	4	5	1	4	5	2
Ambulance companies...			4			4			4
Field-hospital companies			3			3			3

Organizations in Infantry divisional areas.	Fourth Infantry divisional area.			Fifth Infantry divisional area.			Sixth Infantry divisional area.		
	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.
Infantry.....	42	21	9	42	21	9	42	21	9
Cavalry.....	5	2	1	5	2	1	5	3	1
Artillery:									
Light.....	5	3	2	5	3	2	5	3	2
Heavy.....	2	2	1	2	2	1	2	2	1
Engineers:									
Pioneer.....	1	1	1	1	1	1	1	1	1
Ponton.....									
Signal Corps:									
Field.....	1	1	1	1	1	1			1
Aero.....							1	1	1
Hospital Corps:									
Instruction companies...	4	5	1	4	5	1	4	5	1
Ambulance companies...			4			4			4
Field-hospital companies			3			3			3

10. TABLE E—Continued.

Organizations in Infantry divisional areas.	Seventh Infantry divi- sional area.			Eighth Infantry divi- sional area.			Ninth Infantry divi- sional area.		
	First year, com- panies.	Second year, battal- ions.	Third year, regi- ments.	First year, com- panies.	Second year, battal- ions.	Third year, regi- ments.	First year, com- panies.	Second year, battal- ions.	Third year, regi- ments.
Infantry.....	42	21	9	42	21	9	41	20	9
Cavalry.....	5	3	1	5	2	1	5	3	1
Artillery:									
Light.....	5	3	2	5	3	2	5	3	2
Heavy.....	2	2	1	2	2	1			
Engineers:									
Pioneer.....	1	1	1			1	2	1	1
Ponton.....					1	1			
Signal Corps:									
Field.....	1	1	1	1	1	1	1	1	1
Aero.....									1
Hospital Corps:									
Instruction companies...	4	5	1	4	5	1	4	5	1
Ambulance companies...			4			4			4
Field-hospital companies			3			3			3

Organizations in Infantry divisional areas.	Tenth Infantry divisional area.			Eleventh Infantry divisional area.			Twelfth Infantry divisional area.		
	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.
Infantry.....	44	21	9	41	20	9	42	21	9
Cavalry.....	5	3	1	5	3	1	5	3	1
Artillery:									
Light.....	5	3	2	5	3	2	5	3	2
Heavy.....	2	2	1						
Engineers:									
Pioneer.....			1	2	1	1	2	1	1
Ponton.....									
Signal Corps:									
Field.....	1	1	1	1	1	1	1	1	1
Aero.....									
Hospital Corps:									
Instruction companies...	4	5	1	4	5	1	4	5	1
Ambulance companies...			4			4			4
Field Hospital companies			3			3			3

Organizations in Infantry divisional areas.	Thirteenth Infantry divisional area.			Fourteenth Infantry divisional area.			Fifteenth Infantry divisional area.		
	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.	First year, com- panies.	Second year, bat- talions.	Third year, regi- ments.
Infantry.....	42	21	9	42	21	9	41	21	9
Cavalry.....	5	3	1	5	3	1	5	2	1
Artillery:									
Light.....	4	3	2	4	3	2	4	3	2
Heavy.....									
Engineers:									
Pioneer.....	2	1	1	2	1	1	2	1	1
Ponton.....							2	1	1
Signal Corps:									
Field.....	1	1	1	1	1	1			1
Aero.....									1
Hospital Corps:									
Instruction companies...	4	5	1	4	5	1	4	5	1
Ambulance companies...			4			4			4
Field Hospital companies			3			3			3

10. TABLE E—Continued.

Organizations in Infantry divisional areas.	Sixteenth Infantry divisional area.			Seventeenth Infantry divisional area.		
	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.
Infantry	42	21	9	42	21	9
Cavalry	5	2	1	5	3	1
Artillery:						
Light	4	3	2	4	3	2
Heavy	2	2	1	2	2	1
Engineers:						
Pioneer			1			1
Ponton				2	1	1
Signal Corps:						
Field			1			1
Aero			1			
Hospital Corps:						
Instruction companies	4	5	1	4	5	1
Ambulance companies			4			4
Field Hospital companies			3			3

Organizations in Infantry divisional areas.	Eighteenth Infantry divisional area.			Nineteenth Infantry divisional area.		
	First year, companies.	Second year, battalions.	Third year, regiments.	First year, companies.	Second year, battalions.	Third year, regiments.
Infantry	42	21	9	42	21	9
Cavalry	5	2	1	5	3	2
Artillery:						
Light	4	3	2	5	3	2
Heavy	2	2	1	3	3	1
Engineers:						
Pioneer			1	1	1	1
Ponton				1	1	1
Signal Corps:						
Field	2	1	1	2	1	1
Aero				1	1	1
Hospital Corps:						
Instruction companies	4	5	1	4	5	2
Ambulance companies			4			4
Field Hospital companies			3			3

11. TABLE F.—Organizations in Cavalry divisional areas.

Organizations in Cavalry divisional areas.	First Cavalry divisional area.			Second Cavalry divisional area.			Third Cavalry divisional area.		
	First year, troops.	Second year, squadrons.	Third year, regiments.	First year, troops.	Second year, squadrons.	Third year, regiments.	First year, troops.	Second year, squadrons.	Third year, regiments.
Cavalry	29	15	5	28	14	5	28	14	6
Horse artillery	3	2	1	2	1	1	2	1	1
Engineers:									
Pioneer, mounted	1	1	1	2	1	1			1
Ponton			1				2	1	1
Signal Corps:									
Field companies	2	1	1	1	1	1			1
Aero companies			1						
Hospital Corps:									
Instruction companies	4	5		4	4		4	4	
Ambulance companies			3			3			3
Field hospital companies			1			1			1

11. TABLE F.—*Organizations in Cavalry divisional areas—Continued.*

Organizations in Cavalry divisional areas.	Fourth Cavalry divisional area.			Fifth Cavalry divisional area.			Sixth Cavalry divisional area.		
	First year, troops.	Second year, squadrons.	Third year, regiments.	First year, troops.	Second year, squadrons.	Third year, regiments.	First year, troops.	Second year, squadrons.	Third year, regiments.
Cavalry.....	28	14	6	28	15	6	29	15	6
Horse artillery.....	2	2	1	2	1	1	3	2	1
Engineers:									
Pioneer, mounted.....	2	1	1	2	1	1	1	1	1
Ponton.....									
Signal Corps:									
Field companies.....	1	1	1	1	1	1	1	1	1
Aero companies.....			1				1	1	1
Hospital Corps:									
Instruction companies.....	4	4		4	4		4	4	
Ambulance companies.....			3			3			3
Field hospital companies.....			1			1			1

12. TRAINING.

The War College Division of the General Staff has recommended that the nine months' training of the continental army be given in three yearly periods of three months each. It has also recommended that companies only be organized the first year, battalions the second year, and regiments the third year. Following these ideas the following apportionment of time is suggested:

	First month.	Second month.	Third month.
First year.....	Recruit training.....	Company training.....	Company training.
Second year.....	Company training.....	Battalion training.....	Battalion training.
Third year.....	Company and battalion training.	.....do.....	Regimental training.

This division is based on these considerations: Training of troops, like all other training, consists of two elements—instruction and practice. Generally speaking, the instruction takes comparatively little time. Practice to the point of proficiency takes much longer. In part of the troop training, such as drill, the instruction consists in teaching certain mechanical movements, and the practice is but a repetition of such movements, either individually or collectively. In other training, such as field work, the instruction consists in the demonstration of the best methods to accomplish certain ends, and the practice consists of exercises which illustrate the application of these methods under varying conditions. The recruit period is devoted to instruction and some practice in the duties of individuals and small units. In the company period individual and small unit instruction are continued to some extent, and their practice is kept up throughout the company training. In like manner, in battalion and regimental movements, while the instruction is largely for officers, the practice of what has previously been learned by individuals,

squads, and companies continues throughout. The time allotted to each kind of training, therefore, is not to be taken as a measure of its importance. Individual training, for instance, is considered of the greatest importance, and, as pointed out above, it is not confined to the month allotted to recruit training, but continuous throughout the entire period.

During the first two years—that is, during the periods of company and battalion training—it is not essential that large bodies of troops should be assembled in one place. The extent of concentration should depend on getting suitable grounds for camping and training, transportation costs, and the number of regular officers available to take charge. Military reservations, either National or State, should be used where available. To reduce the number of regular officers required organizations equal at least to the strength of a regiment should be assembled in each place the first two years. Each one would not be required to travel a great distance, and the transportation cost could be kept within reasonable limits. The third year, in order to have proper supervision and let regiments have the benefit of contact and association with others, several regiments should be ordered to the same place.

The time to be devoted to training each day is a subject that requires careful consideration. On the one hand we realize that the period available is all too short for the desired end to be accomplished, and that no time should be wasted. On the other, experienced officers know that when kept at a given task too long men lose interest in their work and become stale. A recent report by Capt. J. W. Barker, Third Infantry, now in France, quotes a circular on intensive infantry training in the French Army. There the schedules provide for a course of 3 hours in the morning, divided into 6 periods of 25 minutes each, and of 4 hours in the afternoon. The latter time is devoted to the different phases of field training. This is believed to be a very good allotment of time. In the morning the drills are so short that interest can be maintained; there is a short rest between the periods; there is a space of about two hours which can be used for theoretical instruction of officers and necessary administrative work. The evenings are left free for rest, recreation, or social intercourse.

In this paper it is not considered practicable to go into the details of training—that is, to prepare programs and schedules of instruction. These should be prepared for each arm of the service by competent officers of that arm. While an exact uniformity of training of the units of the continental army can not be expected from troops scattered all over the United States, with its great variety of terrain and climate, as great a degree of uniformity as possible should be attempted. To this end programs of instruction should be issued by

a central authority, setting forth the subjects in which training is to be given and the approximate time to be devoted to each. The weekly and daily schedules based on these programs should be prepared by the Regular officers detailed as instructors in each locality, and will necessarily be varied, within the prescribed limits, according to local conditions. These programs and schedules should keep in view the end for which these men are being trained—to prepare them for field service in war. Too much time should not be devoted to close-order drills, though these should not be neglected. They are valuable in teaching men instant and unquestioned obedience to the orders of their superiors, and their frequent practice will tend to make this a habit. For this reason they are an important auxiliary in inculcating discipline. After a reasonable degree of proficiency—not the precision approaching perfection—is attained these drills should be held for only a short period each day, but to prevent the acquisition of loose habits there should be some close-order drill every day during the period of company, battalion, and regimental training. The greater portion of the time should be devoted to training in the duties pertaining to fieldwork, including target practice and combat firing. In the third year all troops should have their full equipment. The proper training of regiments requires that they should take the field with their allowance of transportation, etc., and the training of engineer, signal, and sanitary troops will be ineffective if not properly equipped.

13. TRAINING OF OFFICERS.

The selection of officers does not come within the scope of this paper. It is assumed that they will be chosen, after examination, from persons who have had some military training, such as former officers of the Regular Army and the militia, noncommissioned officers of the Regular Army and the militia, graduates of schools with a military department having a Regular officer as instructor, etc. The first year it will be necessary to appoint company officers only. The previous training of these men will necessarily be somewhat varied, but the examination before appointment should set a standard of military knowledge on which to base courses of theoretical and practical instruction. The officers should be appointed at least six months before the time set for the training season of troops. During this period the best method of training them would be to attach them to organizations of Regular troops, when they could receive both theoretical instruction in garrison schools and practical instruction in administration, garrison, and fieldwork. This practical course should include opportunity to act as instructors and to exercise command. (Many schemes of instruction minimize the importance of

administration and provide for the least possible time being given to work of that character, but for a company officer especially a thorough knowledge of such duties is essential to proper command. Upon it depend largely the discipline, proper equipment, and feeding of his company.) If it is found not to be practicable to attach officers to Regular organizations as recommended, the next best thing is a theoretical course conducted by the correspondence method. This would necessarily defer the practical instruction of officers to the period of training of troops, and would increase very materially the work of the Regular officers during that period. The reserve officers will have such a knowledge of close and extended order drill and target practice that their services can be utilized under supervision in the instruction of their men in these respects up to include the school of the company. The instruction in care of equipment and men and in all matters pertaining to fieldwork will be given by the Regular officers to officers and men together. This should be supplemented for the officers by lectures before the exercises and by conferences afterwards. As the officers, either from previous training or special aptitude, show proficiency, they should be selected and utilized as instructors. In the second and third years the theoretical instruction of officers should be continued outside the training period, and during this period the exercises will be devised to give both instruction and practice in the duties of officers in battalions and regiments.

14. MOBILIZATION.

During the first three years there will be ample time for a careful examination of the terrain and transportation facilities of each divisional area, with a view to the selection of the most suitable places for the assembly of divisions in subsequent years. The selection of such sites should be determined by their accessibility, facilities for camping and supply, and suitable terrain for the training of all the elements of the division and the field army troops temporarily attached thereto and for exercises involving the movements of the entire division. It is probable that in the more thickly settled portions of the country it will be necessary to make use of private property and in many cases of land which is ordinarily under cultivation. By having the mobilization in the fall after crops are gathered, arrangements with property owners can be made which will throw open for military use much land of the character desired.

General and staff officers for brigades and divisions should be selected and assigned during the first three years. They should be utilized in selecting the divisional mobilization places, and in studying out, within their respective spheres, all matters pertaining to the

mobilization of the organizations to which they belong. This would include arrangements for transportation and supply, preparation of orders for movements and a program of duties and exercises covering the entire period of the encampment.

The assembly of divisions gives the only opportunity for general officers and the higher staff officers to practice some of the duties they would be called on to perform in war. It is also of value to other officers and men in showing them the relation of their own smaller units to others in the general scheme of organization and in teaching the necessity for teamwork in any exercises involving the use of large numbers of troops. The mobilization should take place at least every third year in order that the officers should have the necessary practice, and all men should have the experience of association with troops of all branches of the service during the period of their training. The mobilization of the division gives an opportunity for inspections which will show the results of the training in smaller camps and the fitness and sufficiency of all kinds of equipment. Based on these inspections, measures can be taken to correct defects, or, if found necessary, to change plans and policies.

15. METHOD OF TRAINING A CITIZEN ARMY ON THE OUTBREAK OF WAR TO INSURE ITS PREPAREDNESS FOR FIELD SERVICE.

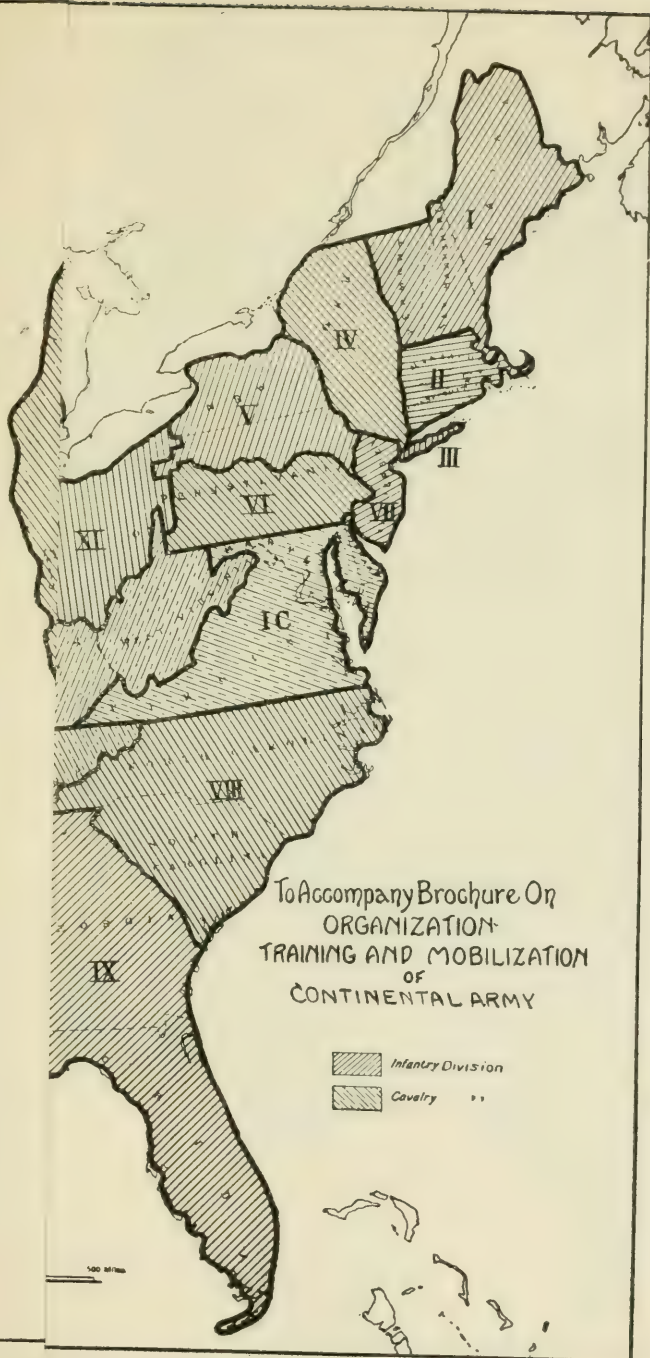
In the preceding portion of this paper there has been no provision made for the organization of field armies, because their composition will depend on the particular work they may be called on to do. This will be determined by the war plans. In consequence they will not be organized until war is imminent and mobilization ordered.

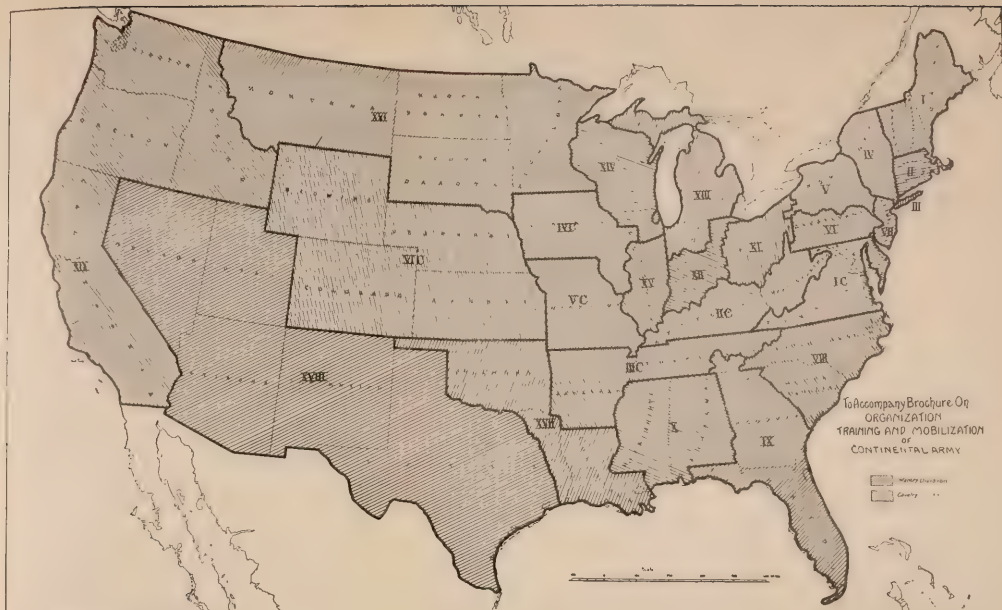
The war plans will also decide the question of the numbers of the continental army on furlough to be called into active service. Unless the full force available is required it may be assumed that they will be called according to their nearness to active training—that is, those last furloughed to be called first. They will be organized according to their previous training and to the needs of the Government.

When mobilization is ordered the units of the continental army, both those then with the colors and those organized from furloughed men, may be ordered to their divisional places of assembly to get their three months' training in whole or in part before proceeding to the field army concentration camps, or the exigencies of the occasion may require the concentration of field armies without delay, in which case troops will be ordered direct from their home stations to such concentration camps. In either event the character of the additional training should be the same. As soon as the troops are assembled, a thorough field inspection should be made by brigade

commanders of Infantry, Cavalry and Field Artillery, and by the heads of the engineer, signal, quartermaster, and medical departments to ascertain first the condition and adequacy of all equipment and second any defects of previous training that need special correction. Such an inspection will take at least a week, but the time will be well spent. After it is finished, a course of training can be laid out. It will consist of a series of exercises, beginning with as small units as companies and progressing through the larger units and the combination of different arms until all the troops are used. One important purpose and result of these exercises will be the physical training of the men. The object should not be, as in athletic contests, to prepare men for a supreme effort—a condition which can not be sustained—but to bring them up to a state of physical hardness and power of endurance which can be retained for an indefinite period. Special exercises for this purpose will not in general be needed—they may be for some individuals—but the outdoor life, regular habits, substantial food, and physical exertion incident to the military exercises should accomplish the desired end. The exercises should also be devised with a view to obtaining these other effects on the individual; to increase his knowledge of the technique of his work; to improve his facility in handling his arms and tools; to acquire the best methods of caring for himself and conserving his health and strength under varying conditions; to increase his morale by inspiring confidence in himself, his leaders, and his organization; to inculcate discipline. The above applies to both officers and enlisted men. The course should give line officers additional instruction and practice in administrative duties, in caring for their men in camp and on the march, and in the principles of leadership before and during combat. The officers of higher grades should have practice in the direction of the movements of large bodies of troops, which will also give the staff officers the desired practice in their various duties. Particular care should be taken, in all the larger exercises, that transportation and supply should simulate war conditions as nearly as practicable, as the results of campaigns are often dependent on them.

It is believed that a carefully prepared and executed three months' course of field exercises, with a previous nine months' training as a foundation, will go far to give the training indicated above as desirable to insure the preparedness of a citizen army for field service.





ORGANIZATION, TRAINING, AND MOBILIZATION OF A RESERVE FOR THE REGULAR ARMY

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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SYNOPSIS.

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ORGANIZATION, TRAINING, AND MOBILIZATION OF A RESERVE FOR THE REGULAR ARMY.

[A brochure based upon and explanatory of a Statement of a Proper Military Policy for the United States, Sept. 11, 1915.]

1. PRINCIPLES GOVERNING BROCHURE.

A Statement of a Proper Military Policy for the United States, submitted September 11, 1915, contains in Chapter III, Reserves, the following paragraph:

41. *The regular reserve.*—As the United States should have a mobile force of 500,000 soldiers available at home at the outbreak of war, the Army, with the regular reserve, should amount to this strength. In order to develop the necessary regular reserve with the Army at the strength advocated in this policy, enlistments would have to be for about eight years—two with the colors and six in reserve. That would, in eight years, result in approximately the following mobile forces at home available at the outbreak of war:

(1) Mobile regular troops (combatant) with the colors-----	121, 000
(2) The regular reserve-----	379, 000
Total -----	500, 000

During the first weeks of war in this country the military situation will probably be critical. At that time every fully trained soldier should be put in the field. To do that with the small military establishment herein advocated it is necessary that during peace the Army be kept at war strength and that the regular reserve be organized and not kept back to replace losses expected during war. Such losses should be replaced from depot units.

2. CHARACTER OF RESERVE DISCUSSED.

Generally speaking, any troops not incorporated in the Regular Army, but intended for reenforcement thereof, constitute a reserve of such Army. This paper deals only with that portion of such a reserve force as is developed through the ranks of the Regular Army and is intended for use jointly with the Regular Army; that which consists of trained and organized mobile troops, ready for use at the outbreak of war under conditions stated in paragraph 6 of the "Statement of a proper military policy."

The estimate of 379,000 men in reserve, stated in the policy, (W. C. D., 9053-90) is based on the experience that while serving with the colors, about 20 per cent per year of our soldiers are lost otherwise than by expiration of enlistment (W. C. D. 9053-43), and on the assumption that such loss while men are furloughed to the

reserve will be at about half this rate and that about 28 per cent of the Army will be enlisted men with special qualifications needed continuously with the colors. The strength being 231,166 (omitting Philippine Scouts and Porto Rican Regiment), 72 per cent thereof, or 166,500, will develop approximately 379,000 reserves at the end of eight years.

3. THE PRESENT "ARMY RESERVE."

It is well, in consideration of this subject, to study the existing law and ascertain whether it will furnish the number of reservists required.

Section 2 of the act of August 24, 1912 (37 Stat., 590, 591; pp. 36 and 37, Bulletin No. 15, War Department, 1912), provided for the Army reserve consisting of:

(1) *Class A*.—Soldiers furloughed and transferred at the expiration of three years' service and soldiers furloughed at the expiration of four years' service, unless they apply to remain with their organizations until completion of the seven-years' period of enlistment, made effective on November 1, 1912, by the act.

(2) *Class B*.—Soldiers who reenlist in the Army reserve for a term of three years at the expiration of a seven-years' period of enlistment, and persons honorably discharged from the Regular Army who may enlist in the Army reserve for a term of three years. No restriction is placed upon reenlistment of any soldier.

The same act provided an "auxiliary to the Army reserve" consisting of honorably discharged soldiers of the Regular Army not over 45 years of age with character reported at least good, who, when called by proclamation of the President in time of war or when war is imminent, present themselves for reenlistment within a specified period and are found physically qualified for the duties of a soldier.

4. REGULATIONS FOR "ARMY RESERVE."

Members of the Army reserve not in active service are not entitled to pay or allowances. If summoned by the President to active service when so authorized by Congress, in event of threatened or actual hostilities, reservists of class A receive during continuance of their service pay and allowances authorized by law for soldiers serving in their organizations and a sum equal to \$5 per month for each month they have belonged to the reserve, as well as actual cost of transportation and subsistence from their homes to the places at which they may be ordered to report for duty. They revert to the grade of private on date of reporting for duty. Reservists of class B receive the same, including additional pay for second enlistment.

Each honorably discharged soldier summoned by the President as part of the "auxiliary to the Army reserve" found physically

qualified and reenlisted in the line of the Army or Hospital Corps receives on reenlisting a *bounty* computed at rates from \$8 to \$2 per month, according to the period which has elapsed since his last discharge, and not to exceed \$300 for any member of such auxiliary.

Doubtless, because of language employed in the last proviso of section 2, viz, "may summon all furloughed soldiers who belong to the Army reserve to rejoin their respective organizations," and because of the opinion of the Judge Advocate General of the Army, October 1, 1912 (pp. 34-39, Bulletin No. 22, War Department, 1912), the Regulations for the Army Reserve, General Orders No. 11, War Department, 1913, as amended, prescribe that the records of class A reservists and of such class B reservists as have been assigned to organizations be kept by the commanders of organizations or chiefs of bureaus, the numbers thereof being noted on monthly returns and the names on December muster rolls, or reported monthly by number, and December 31 by name in letters to The Adjutant General.

The custodians of such records furnish each reservist whose record is held a postal card once each quarter, on which the reservist reports any change of address or change in name and address of nearest relative. This represents the only measure by which the number of reservists still alive may be estimated. No measure provides verification of physical condition of reservists.

5. DEFECTS OF PRESENT LAW.

This law is defective in the following respects:

(a) It will not develop an adequate reserve. On May 8, 1915, The Adjutant General submitted an estimate of the approximate number of men who under this law will be furloughed or transferred to the Army Reserve. Basing his estimate upon the percentage of men enlisted or reenlisted who did not from 1908 to 1914 reenlist after completing their periods of enlistment, he reported that by November 1, 1919, seven years after the seven-years' period became effective, the Army Reserve may amount to 25,624 enlisted men, the number thereafter furloughed to the reserve being approximately equal to those discharged from the reserve. He reported that if all men who did not intend to reenlist be furloughed to the reserve at the expiration of three years' service the reserve by November 1, 1919, may amount to 34,000 men. Even if no casualties occur among members of the reserve, its strength will never be sufficient to raise units from peace to war strength if such step be desirable. The Regular Army, including reserve, will never exceed 134,000 men under this law.

(b) No reliable estimate can be made of the number of reservists to be anticipated.

The estimate given in (a) is confessedly only a guess. As enlistment is not limited, and men have the option of serving three, four, or seven years of the period for which enlisted, the reserve developed, as well as the actual strength of the Army, depends upon the business conditions of the country. If labor commands a high price, men who do not desert will seek purchase of discharge after one year's service or furlough to the reserve after three years' service. If times are hard and their station agreeable, they may decide to remain seven years and then reenlist, or may reenlist at expiration of four years rather than pass to the reserve. Their decision may be influenced by conditions prevailing at their stations or their satisfaction or dissatisfaction with their commanders or associates.

(c) The law by providing that reservists shall, when summoned, "*rejoin* their respective organizations" countenances the expensive and inefficient system of reduced strength of units in peace.

In a country of as great area as the United States reservists could not always or usually join "their respective organizations" in time to participate in employment of such organizations when war comes without warning. Even if, after long and expensive journeys, these reservists join the companies from which furloughed, they would not find arms and equipment on hand for issue. If such are kept always with companies, much expense for transportation will result. Officers for a company of Infantry of 150 men cost no more than for a company of 65 men. The same officers can command and administer 150 men in war efficiently only if required to command and administer approximately the same sized organization in peace.

(d) Mobilization must be delayed, even when hostilities are actual, until authority can be obtained from Congress.

If Congress be not in session, or if, being in session, the question be debated, the transportation, equipment, and training of the Army Reserve may be delayed until a hostile force has effected a landing or crossed our international border.

(e) Absence of any authority to mobilize, inspect, or train reservists, except "in event of actual or threatened hostilities" and "when so authorized by Congress," renders uncertain how many reservists may be relied upon and "found physically fit for service."

Freed from the restraints of discipline and separated from the sanitary conditions surrounding them when with the colors, furloughed soldiers may contract vicious habits or incurable diseases, may lose eyesight, hearing, or a limb, and yet be borne on the rolls of "their respective organizations" as potential soldiers when summoned.

(f) Payment of bounties to members of the "auxiliary to the Army reserve" and of sums not thus called, but equivalent to bounties to members of the Army reserve, gives legislative sanction

to a pernicious system of purchasing compliance with his duty by a citizen in the first case and with the obligation voluntarily assumed by a soldier in the second.

Any ex-soldier whose services are desirable in war will appear somewhere, either as an officer or enlisted man of volunteers, or as an enlisted regular, whether or not it be possible for him to collect a bounty "not to exceed \$300." A soldier who has been away from the colors six years and six months will receive the total of \$300, as will another who, having been discharged at 21 (after three years' enlistment under former laws), offers to enlist 23 years later, or before he is 45. Is either worth more than a young, healthful college graduate with four years' attendance at such an institution as Cornell and two or three summers at a students' camp? No "bounty" is payable to the latter.

A member of the Army reserve, sworn to serve seven years, but furloughed during the latter four, may be paid at the rate of \$5 per month for the entire period spent in the Army reserve. No limit of \$300 is prescribed in determining the total of such sums payable. If a soldier has served as a reservist more than five years in various enlistments, he receives more than \$300 (pp. 4 and 5, Bulletins 33, War Department, 1913). Why should a soldier be paid for complying with his oath of enlistment?

Reports of The Adjutant General show that about 61,033 ex-soldiers who left the service from June 30, 1910, to June 30, 1914, are now in civil life. Should the President call upon them to present themselves for reenlistment under this Act about June 30, 1916, the possible bounties payable, ranging from \$192 to \$300 (2 years to 6 years, 6 months out of service), amount to \$15,000,000. Other ex-soldiers, discharged fiscal years 1891-1909, inclusive, amount to 83,000, and their bounties to \$25,000,000, a total of \$40,000,000 for the "auxiliary to the Army reserve." At the average rate of annual pay of infantry soldiers in a peace strength company (\$213 about) this sum, offered to purchase enlistment of 83,000 men, would furnish more than the pay of 10 divisions for one year. If the possible Army reserve after 1919 be estimated at 34,000 men, and the average period of each of these in the reserve be considered two years (half the possible period in reserve during one enlistment), return of these to the colors would cost over \$4,000,000—a little more than the pay of one division for a year.

6. NECESSITY FOR CHANGE IN LAW.

As this legislation represents our first effort to provide by law for a reserve of the Regular Army, it is not surprising that the result is disappointing.

It was stated in the Report of the Organization of the Land Forces, 1912 (p. 31) :

In adopting a new policy in our Army it is important that present conditions should not be disturbed more violently than necessary.

* * * The important thing is to take a step toward the new policy, leaving its perfection to the experience of the future.

After the experience of the past three years it is necessary that we so change the legislation governing a reserve that such force may be developed regardless of business conditions, developed to an extent sufficient for adequate defense and capable of immediate mobilization in organized units composed of men physically fit and properly armed and equipped without the necessity and expense of purchasing compliance with military obligations by payment of bounties.

7. DEVELOPMENT OF RESERVE.

If the country can afford the expense, the 500,000 men found necessary for immediate use against trained troops of a possible invader should all be continuously with the colors, and continued reenlistment of every desirable soldier should be encouraged. The professional soldier should be encouraged to remain permanently in the ranks, and the only reserve required can be gradually absorbed from depot units as casualties occur in war.

The expense for the Army under this plan would be prohibitive; but, if we do not have reserves, we are committed to a policy of maximum cost.

If the country can not afford to adopt a system involving maximum cost, it is equally necessary to have ready for immediate mobilization a force equal in size and as nearly as possible equal in training.

The military problem is not affected by the financial ability of this country to meet the bill. If the 500,000 men required are not maintained always with the colors they should at least have served with the colors in the ranks of the Regular Army a period sufficient to receive training that will render each member continuously efficient during his period in the reserve. This period is fixed at two years in the Statement of a Proper Military Policy. The period each such trained soldier must remain in the reserve depends upon the relation of the strength with the colors to the total force required and the percentage of each unit which, because permitted to reenlist, does not contribute toward development of a reserve. In this policy such period is six years, based upon figures shown in paragraph 2 above.

The economic effect of a reserve system is to reduce the per capita cost of an army of the size demanded by the military situation. Economy suggests designation of a large fraction of the 500,000 required as reserves. Effective action in emergency limits such

expansion of the reserve portion to that fraction which can retain efficiency and jointly with the peace nucleus satisfy the demands of the military problem.

The provision of a reserve is a purely business proposition.

8. COMPOSITION OF EACH UNIT, REGULAR ARMY.

The enlisted strength of every unit of the Army should consist of two portions:

(a) A permanent personnel composed of those men essential to the continued discharge by such unit of its function as a training school for reservists.

(b) A temporary personnel composed of those citizens who are passed through this training school and prepared for possible service as members of other (reserve) units of the same or of a similar arm of the service.

9. PERIOD WITH THE COLORS SHOULD BE DEFINITE.

While deserving soldiers, who apply and are recommended by their commanders as sufficiently trained, should be granted furloughs to the reserve after a period of less than two years, provided the military situation warrants the grant of such privilege, it must not be optional, as now, for a soldier to remain with the colors longer than two years, unless he be a noncommissioned officer or a man of other technical training essential as a member of the permanent personnel of his organization for the training of other soldiers or the administration of the organization. To permit soldiers generally an option as to length of service with the colors, is to continue the present uncertainty as to the size of reserve that may be developed. The privilege of discharge by purchase should be repealed. Not to exceed 28 per cent of each unit should be permitted to reenlist.

No soldier, whether with the colors or with the reserve, should be discharged except for expiration of period of enlistment, by sentence of court-martial, or for physical disability or other unfitness for military service.

10. DEGREE OF READINESS OF REGULAR RESERVE.

Reserve units supplied with trained personnel should not be confused with the force of citizen soldiers discussed in the first section of paragraph 42 of the Statement of a Proper Military Policy. The latter force will probably not have received, in time of peace, sufficient training to render it fit for immediate employment against the enemy at the outbreak of war, but the reserve of the Regular Army must be ready for such employment, and hence its members must

have had such training as will fit it for immediate service jointly with that portion of the Regular Army serving with the colors. For the same reason it must have in peace such organization and equipment as will render possible its instantaneous mobilization and transportation to the places at which its action is desirable when war becomes imminent.

11. ORGANIZATION OF UNITS.

Section 4 of the act of Congress approved April 25, 1914, contains this proviso:

Provided further, That when military conditions so require, the President may organize the land forces of the United States into brigades and divisions and such higher units as he may deem necessary, and the composition of units higher than the regiment shall be as he may prescribe.

The reserve of the Army being a part of the Regular Army, and therefore of the "land forces of the United States," according to the act cited above, this proviso authorizes the organization of reserve units higher than the regiment by Executive orders of the President. Organization of other units—regiments and lesser—has been provided by various acts of Congress. Because of development of armament and function of certain branches of the service, this legislation requires changes. The organization of various units of the Regular Army reserve should be the same as the organization of similar units of the Regular Army.

12. MOBILE TROOPS ALONE REQUIRED.

The military problem requiring a force of 500,000 men available at home as a mobile force, that portion designated as a regular reserve, must be composed of mobile troops.

As stated in paragraph 32 of a Statement of a Proper Military Policy, all mine fields and over-sea guns and one-half the guns at home are manned from the Regular Army. The remainder of the guns at home are to be manned by Coast Artillery units of the Organized Militia.

This arrangement suggests the propriety of assigning enlisted men of the reserve who have received training as members of the Coast Artillery Corps units of the Regular Army to reserve units of Field Artillery. This is especially desirable, as the quota of reservists developed by units of Field Artillery recommended will not be sufficient to furnish personnel for the corps or field army artillery required as a portion of the mobile artillery of the reserve.

13. DISTRIBUTION IN ARMS OF THE SERVICE.

Based upon the enlisted strength of various units of the Regular Army shown in Tables of Organization, 1914, the 379,000 enlisted members of the reserve would furnish mobile reserve units approximately as follows:

No.	Units.	Enlisted strength.			
		Combatant.	Sanitary.	Quarter-master Corps.	Total.
15	Divisions, Infantry.....	310,095	12,390	6,315	328,800
3	Divisions, Cavalry.....	26,931	1,344	810	29,085
9	Regiments, Heavy Field Artillery.....	10,980			10,980
3	Regiments, Mountain Field Artillery.....	3,297			3,297
10	Ponton battalions, Engineers.....	4,940			4,940
5	Field battalions, Signal Corps.....	815			815
15	Aero squadrons, Signal Corps.....	1,350			1,350
5	Corps, or field armies.....	358,408	13,734	7,125	379,267

No sanitary nor supply units for corps or field army troops nor line of communications troops need be organized in this reserve. Sufficient sanitary and supply units as composite parts of divisions are shown above for units which may anticipate contact with the enemy. Such troops for corps or field army troops and all troops for the line of communications may be supplied by citizen soldiers not necessarily possessing so great a degree of training.

14. ESTIMATE OF STRENGTH AFTER THREE YEARS.

Upon the adoption of a policy such as is recommended, the members of the present Army reserve and such men as have enlisted under the present law will, as furloughs become due, constitute the only reservists until two years from the date the new law becomes effective. As seen in the discussion of the act of August 24, 1912, the size of the reserve during such period will not until November 1, 1919, exceed 34,000, if men generally are furloughed at expiration of three years' service, or 25,000 if furloughed generally at the expiration of four years' service.

If legislation pursuant to this policy be adopted so as to give effect thereto July 1, 1916, the Army reserve should by July 1, 1918, equal about 20,000 men. By July 1, 1919, the increment received by the reserve under the new law should be 112,000 (86 per cent of 131,000, the added strength of the Regular Army), which, with what then remains of the "Army reserve," should furnish a reserve of about 135,000 men.

15. ORGANIZATION UNDER DEPARTMENT COMMANDERS.

Until such time members of the reserve, being dispersed by residence throughout the country and being comparatively small in number, could not well be organized into units larger than companies, troops, batteries, etc. Records of reservists should be kept at each department headquarters until administrative units (regiments, separate battalions, etc.) can be organized. A soldier furloughed to the reserve should, on designation of the place of his intended residence, be directed to report (on blank form prepared for him by his organization commander) to the department commander or administrative unit commander of his branch of the service for the area including his selected place of residence. Regulations governing his duties and rights should be given him for his guidance. Subsequent instructions should be sent to him, at the address reported by him, from department headquarters or from the headquarters of the administrative unit to which he may be assigned. An officer of the General Staff, under direction of the department commander, should have charge of assignment of all furloughed soldiers coming within the department until administrative units shall have been organized. Thereafter the same officer should care for correspondence concerning assignment of personnel to and supply and mobilization of administrative units organized within the department.

16. OFFICERS FOR REGIMENTS AND SMALLER UNITS.

No officers for this reserve of higher grade than captain need be appointed or assigned until the numerical strength of the reserve of any branch of the service residing within a definite area is sufficient to warrant organization of units larger than companies, troops, batteries, etc.

The supply of officers for the reserve is the subject of another brochure.

An excellent source of supply of company officers during the early stages of this organization will be found among retired noncommissioned officers and ex-noncommissioned officers of the Regular Army living now at various places throughout the country. These should all be given opportunity to compete by examination for appointment to the grades of company officers. Field officers for the reserve should be selected after examination from among retired officers and ex-officers of the Regular Army living within the proper departments of administrative unit areas.

17. OFFICERS FOR DIVISIONS AND BRIGADES.

Divisions and brigades when organized should be commanded by officers of the Regular Army, detailed in peace for such duty, appointments as general officers becoming effective only on mobilization because of actual or threatened hostilities.

Such appointments should create temporary vacancies in the grades held by such appointees, to be filled in a manner provided for similar temporary vacancies caused by appointments to higher volunteer rank under section 8 of the act approved April 25, 1914.

18. ARMS AND EQUIPMENT.

Deposits of arms and equipment for this reserve should be placed in storage at Army posts, in Government buildings, and at rifle ranges of the Organized Militia. Where such facilities are not available, at storehouses erected for the purpose.

At each such location an officer of the reserve, placed on active duty throughout the year, should be custodian of and accountable for the arms and equipment.

Sites for these deposits, as they are to become mobilization points for the reserve, should be places from which railway communication facilitates prompt dispatch of mobilized units toward camps of concentration or mobilization.

19. ANNUAL TRAINING OF RESERVE.

While every enlisted member of the reserve will have had training sufficient to establish his efficiency before furlough to the reserve, maintenance of that degree of efficiency and demonstration that he is still physically and morally fit for service suggest the propriety of an annual period of inspection and training.

In the report of the Organization of the Land Forces, 1912, the period recommended for such training was 10 days each year.

Without this opportunity to determine the physical and moral state of each reservist and his dependability as a possible soldier in war, the country may find, when actual or threatened hostilities cause mobilization of the reserve, that its personnel is not dependable to the extent shown by records of its strength.

20. ELIMINATION OF THE UNFIT.

Until mobilization places or camps can be designated for assembly of units as large as regiments, the reserve should have its training at the nearest Army stations. Until units as large as companies, troops, and batteries are organized, individual reservists joining at the nearest Army stations should be attached to regular organizations

of the arm of service appropriate. During the assembly for training each reservist should be physically examined and his conduct and habits observed closely. If he should have developed disease such as to render him probably unfit for service in war, or if his character be such as to render him undesirable as a soldier, he should be discharged. Having been examined physically at the time of furlough to the reserve, no right to pension for disability incurred during such status of furlough should be recognized.

For failure to comply with orders to report for training, a reservist can be tried and punished, if arrested. Whether such disciplinary action should be undertaken or the delinquent discharged for the convenience of the Government is a question that can be best determined after experience with a reserve system. The controlling policy should be to count upon no strength of the reserve that is not dependable in case of war.

21. SHOULD PAY BE GIVEN FOR SERVICE IN RESERVE?

A wise means of insuring presence of reservists at the annual training is to postpone the delivery to him of any payment authorized until he has appeared at the designated assembly point and completed the training prescribed. This leads to the question of remuneration for service while on furlough as a member of the reserve.

Under a system of compulsory service no pay is necessary or wise. The furloughed soldier is a citizen and his annual training is a compliance with the law which specifies the duties demanded of him in return for rights and privileges enjoyed.

Under a system of voluntary enlistment, some pay, monthly or annual, may be necessary, or citizens will not enlist in sufficient numbers to enable the troops with the colors to develop sufficient reserves. Whatever be the amount found necessary and desirable, payment thereof is for having been ready and dependable as a reservist for the time for which payment is to be made. To pay by mail on mere report by the reservist that he is alive and residing at his proper address is to pay possibly for one who would not be acceptable as a soldier if called to the colors.

22. PAY DUE FOR ANNUAL TRAINING.

Full pay of grade held on furlough, for the period spent in training, and traveling allowances to place of assembly and return to his home should be paid whether any reserve pay be authorized or not.

Men furloughed as noncommissioned officers should hold such grades during training, subject to reduction if their conduct or lack of efficiency warrant.

When the training is to be had at a point distant from the assembly point or deposit of arms and equipment, transportation should be by organization.

Transportation from homes to the assembly points should be issued by the reserve officers on active duty at assembly point, or by any postmaster to whom transportation requests can be issued as an acting quartermaster. Subsistence for individuals should be provided by reimbursement at reasonable rate per meal instead of by advance of funds.

23. ADVANTAGES OF ANNUAL ASSEMBLY RESERVE.

The character of training deemed necessary will be demonstrated only by experience.

The main purposes of assembly for training will be:

- (1) Opportunity of reserve officers to acquire some knowledge of their subordinates;
- (2) Opportunity to eliminate the undesirable and promote the efficient;
- (3) Opportunity to insure continued acquaintance of men with arms and equipment, the models of which may have changed during their furloughs;
- (4) Opportunity through joint maneuvers with the troops with the colors to preserve acquaintance with modern and possibly changing methods of tactical training; and
- (5) Opportunity to verify the number and inspect the condition of men shown by the returns to belong to the reserve.

Any one of these purposes should prove sufficient warrant for the expense incurred through such periodical opportunity to make an inventory of our reserve and determine its value as a military asset.

24. MOBILIZATION OF RESERVE.

The mobilization of a reserve should be subject to orders of the President. Solution of our military problem demands that the reserve be as ready for prompt action as troops with the colors. It will not be as near the scene of its intended action, but no delay in calling its members to the colors should result through necessity, as under the present law, of waiting for authority of Congress.

Having been directed by the President, mobilization should proceed under control by department commanders.

Units having assembled at the points previously designated and used for deposit of arms and equipment for each annual training should be moved by department commanders, according to instructions received by them, either to designated points in the theater of

operations or to mobilization or concentration camps. Whether organizations should be held in the areas pertaining thereto for delivery of animals and motor or wagon transportation or should be sent to camps of mobilization and there supplied with transportation of this kind will depend upon the military situation. Usually the latter course will be preferable, as wagons, harness, etc., from general supply depots and animals purchased or requisitioned may be more economically and promptly delivered to organizations at camps of mobilization.

25. NOTICE OF MOBILIZATION.

Notice of orders for mobilization, however received, should charge each officer and man of the reserve with the duty of reporting at the place where arms and equipment are deposited for his organization. A proper way of serving such notice would be by posting a copy of the proclamation of the President at every post office, railroad station, and telegraph office in the country. This duty could be assigned to postmasters. In addition, written notice should be mailed by the reserve officers on active duty at all the assembly points at which arms and equipment are deposited to each member of the organization required to assemble at such points. These, in blank forms, should be addressed in time of peace, only the date of mobilization being entered before mailing. Addresses should be changed as residences change.

26. TRANSPORTATION AND SUBSISTENCE OF RESERVISTS.

Postmasters, designated as acting quartermasters, should be given blank transportation requests with which to furnish reservists transportation to places of assembly. After the reserve has been developed to the strength above shown possible, places of assembly will be so numerous and well distributed that, except in the case of members of Signal Corps, engineers, and possibly certain field artillery organizations, no reservist need travel more than a few hours in order to join. Reimbursement for expense of meals en route, at a rate of 25 cents per meal, should be made after reporting at the assembly point. Officers joining, on mobilization, should receive mileage from homes to places designated for commencement of their duties.

27. RECORD OF ASSEMBLY AND PHYSICAL EXAMINATION.

No muster will be necessary. Organization rolls should be kept up to date in peace so that notation on such rolls of the date each reservist joins need be the only official record of the date when his service under mobilization is commenced. Physical examination by a surgeon of the reserve should be made as soon as practicable after

joining to determine whether his condition warrants service either (1) with his organization or (2) in some less active status with the line of communications troops or at a regimental depot. In some cases physical disability for any use in war may warrant discharge. No soldier should be forwarded with his organization who is not physically fit for service in the field and free from communicable disease.

28. CLOTHING FOR RESERVISTS.

Whether each member of the reserve be required to keep himself supplied in peace with one serviceable service uniform, to be worn to place of assembly on mobilization, or the clothing for each organization be deposited with arms and equipment and issued for each training period and on mobilization, can be determined only by experience. As a soldier's title to his clothing is shared by the Government until discharge, it is legal and equitable to require him to keep some service uniform during his period of furlough and to use it at each annual assembly for training and on mobilization.

On the other hand, a furloughed soldier might wear this uniform when not called for training or mobilization, and many would not have serviceable clothing when such is needed.

An organization will be more uniformly and serviceably clothed if the latter plan be finally adopted, but its adoption will increase considerably the expense of maintaining the reserve.

29. ADVANTAGES OF POLICY OUTLINED.

The policy recommended will develop a reserve. Its strength can be definitely estimated. Its efficient employment with the regular troops with the colors whenever circumstances warrant mobilization can be reasonably anticipated. Its adoption will reduce the per capita cost of the force demanded for solution of the national military problem.

While more than human foresight is required to frame legislation for which subsequent experience may not suggest the propriety of amendment, the reasons just cited justify adoption of legislation giving sanction to the policy.

**ORGANIZATION, TRAINING, AND MOBILIZATION OF
VOLUNTEERS UNDER THE ACT OF
APRIL 25, 1914**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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ORGANIZATION, TRAINING, AND MOBILIZATION OF VOLUNTEERS UNDER THE ACT OF APRIL 25, 1914.

I. INTRODUCTION.

Under existing laws and under conditions contemporaneous therewith it has heretofore been assumed that in the event of a war with a first-class power the United States would require not less than half a million men for the first line, behind which could be prepared the greater army of citizen soldiers, upon whom our main reliance for national defense is traditionally placed.

According to the recommendations of the War College Division of the General Staff, the first line should now consist of half a million *fully trained* troops, composed of the Regular Army and the reserve, which has been trained by service in the Regular Army, supported by an additional force of fully half a million citizen soldiers, "prepared to take the field immediately on the outbreak of war," who "should have had sufficient previous military training to enable them to meet a trained enemy within three months."

At the present time the Regular Army at home could perhaps be expanded to about 100,000 men by the addition of a large proportion of recruits, and there would still be required for our first line about 400,000 citizen soldiers. This combined force would be insufficiently trained.

The existing Organized Militia, if expanded to war strength, would furnish some 280,000 men; but, as explained later, these will not be available for all national purposes. To insure the entire control by the Federal Government over the required additional forces and the employment of such forces wherever the interests of the Nation may require, they must be enrolled as Federal troops, either as Regulars or as Volunteers.

The War Department, in Circular No. 19, Division of Militia Affairs, December 29, 1914, has published tables showing the tentative assignment of existing and proposed units of Organized Militia to complete the organization of four field armies, which, with recruit-depot troops, headquarters detachments, trains, etc., would aggregate about 400,000 men. Accordingly the first call for volunteers would be for that number, and later calls would be made as circumstances might warrant. The manner of raising volunteers under a later call would be in all respects similar to that followed in raising of new units under the first call.

The volunteer law is contained in the act of April 25, 1914, and provides for the raising of such forces in time of actual or threatened war. The law should be so amended as to provide for raising and partially training a force of half a million citizens in time of peace and before war is actual or threatened.

II. RELATION OF THE ORGANIZED MILITIA TO THE VOLUNTEERS.

The difficulties attendant upon the raising of volunteer forces can be appreciated only by considering the relation which the Organized Militia bears to such forces. The militia law is contained in the act of January 21, 1903, as amended by the acts of May 27, 1908, and of April 21, 1910. Section 5 provides "that whenever the President calls forth the Organized Militia * * * to be employed in the service of the United States, the militia so called shall continue to serve * * * either *within or without* the territory of the United States."

The Attorney General, in a decision of February 17, 1912, states that the Constitution "affords no warrant for the use of the militia by the General Government except to suppress insurrection, repel invasions, or to execute the laws of the Union; but by its careful enumeration of the three occasions or purposes for which the militia may be used forbids such use for any other purpose."

Hence the Organized Militia, though called and mustered into the service of the United States, can be employed only for the purposes stated above. It can not, therefore, become in all respects a national force, available for all purposes for which an army may properly be employed.

Section 5 also provides:

Provided further, That when the military needs of the Federal Government arising from the necessity to execute the laws of the Union, suppress insurrection, or repel invasion can not be met by the Regular forces, the Organized Militia shall be called into the service of the United States *in advance of* any volunteer force which it may be determined to raise.

In any war in which we are likely to become engaged the military needs of the Federal Government can not be met by the Regular forces, and it will be necessary that the militia be called out.

The governor is the commander in chief of the militia of his State. Circumstances might arise which would apparently justify him in failing to cooperate and give effect to the call. Or, if neither he nor the people of his State were in full sympathy with the objects of the war, he might, in anticipation of the call, discharge any or all of the militia, thus nullifying the call as far as that State is concerned. It is but a few months since that a governor exercised his prerogative and mustered out the entire State Militia.

Individuals of the militia who refuse or neglect to respond to the call of the President are subject to trial by court-martial and to such punishment as the court-martial may direct. It is probable that many would find that they were unable to leave their homes, for reasons that might seem to them sufficient, and it would hardly be practicable to spare from other and more important duty the number of officers that would be required for this court-martial duty alone. Careful consideration leads to the conclusion that attempts to force such unwilling service will generally be barren of result.

Section 3 of the volunteer law provides:

Provided further, That when three-fourths of the prescribed minimum enlisted strength of any company, troop, or battery, or when three-fourths of the prescribed minimum enlisted strength of each company, troop, or battery comprised in any battalion or regiment of the organized land militia of any State, Territory, or the District of Columbia, organized as prescribed by law and War Department regulations, shall volunteer and be accepted for service in the Volunteer Army as such company, troop, battery, battalion, or regiment, such organization may be received into the volunteer forces *in advance* of other organizations of the same arm or class from the same State, Territory, or district, and the officers in the organized land-militia service with such organization may then, within the limits prescribed by law, be appointed by the President, by and with the advice and consent of the Senate, as officers of corresponding grades in the Volunteer Army and be assigned to the same grades in the said organization or elsewhere as the President may direct.

Under this authority, it would be possible for 49 men, three-fourths of the prescribed minimum strength, of a militia company of Infantry, with little or no training, to volunteer and bring into the volunteer service with them their three officers in advance of 150 men, who have perhaps had service either in the Regulars or Volunteers, and who are ready to be mustered into the volunteer service as a company of Infantry. It remains to be judicially determined whether such organizations *must* be received, and whether such officers *must* be appointed.

In the last proviso of section 3 of the volunteer law, Congress has apparently anticipated that not all the organizations of land militia called into the Federal service would volunteer; and that it may be desirable in raising volunteers to depart from the present proportions of the various arms or classes in the militia.

Provided further, That when the raising of a volunteer force shall have been authorized by Congress, and after the organized land militia of any arm or class shall have been called into the military service of the United States, volunteers of that particular arm or class may be raised and accepted into said service in accordance with the terms of this act, regardless of the extent to which other arms or classes of said militia shall have been called into said service.

It will be noted, however, that this provision becomes effective only during the existence or imminence of war.

From what precedes, it follows that not even an approximate estimate can be made of the number of officers and men of the Organized Militia who will respond to the call of the President; nor, having responded, of the number of organizations that will volunteer and be accepted for service in the Volunteer Army. The transfer from the status of militia to that of volunteer must be a voluntary act; and it can be accomplished only during the existence or imminence of war, and after Congress shall have authorized the raising of a volunteer force. A promise, made in time of peace, to volunteer in the event of war, can not be legally binding, and should therefore be neither given nor accepted.

It is evident that no definite plans can be made in time of peace for the actual employment in war of any individual or organization of the Organized Militia, either as militia or as volunteer. In such plans as have been made, however, it has been assumed that all will respond to the call as militia and that all militia organizations will volunteer and be accepted for service in the Volunteers.

III. ORGANIZATION OF VOLUNTEERS.

1. PROCLAMATIONS.

Volunteer forces may be raised, organized, and maintained only during the existence or imminence of war, and only after Congress shall have authorized the President to raise such forces. Congress could, however, by legislative enactment, authorize the President to raise such forces in time of peace.

When so authorized the President will issue his proclamation, stating the number of men desired for each arm, corps, or department, within such limits as may be fixed by law. It is probable that the proclamation will also recite the causes that make the call necessary and will state that the enlisted men shall be taken, as far as practicable, from the several States, Territories, and the District of Columbia in proportion to the respective populations thereof.

The volunteer law provides that at the termination of the war, or upon the passing of the imminence thereof, the President will issue a proclamation reciting that fact, and as soon as practicable thereafter all officers and enlisted men of Volunteers will be mustered out of such service.

Following the call of the President for volunteers, the Secretary of War notifies the governors, etc., as in a call for militia, informing them of the quota for their respective States, the existing militia organizations that will be received into the Volunteers, the new organizations that it is desired to raise, and the maximum and minimum strength of organizations.

It will obviously be impracticable to apportion volunteers exactly according to population if all the militia volunteer, for many of the smaller States have organizations which, if brought to war strength, would exceed their quota under a call for 400,000 men. The law requires such apportionment to be made "as far as practicable" according to population. If the quota be exceeded in any State, such excess would be adjusted in a later call.

2. TERM OF ENLISTMENT, ETC.

The term of enlistment will be the same as that for the Regular Army, exclusive of reserve periods.

No person will be enlisted in the volunteer forces or mustered as an enlisted man into said forces who is not effective and able-bodied, or who is under 18 or over 35 years of age, or who is unable to speak the English language; except that the superior age limit of 35 years is not applicable to those members of the enlisted personnel of a company, troop, battery, battalion, or regiment of duly Organized Land Militia who volunteer and are accepted as a part of the organization to which they belong, if said organization be accepted as such for service in the volunteer forces, nor is it applicable to the reenlistment in the volunteer forces or the muster into said forces of a man who has had prior enlisted service either in the regular or volunteer forces of the United States.

A minor between the ages of 18 and 21 years must deliver to the mustering officer a written consent to his enlistment as a soldier in the volunteer army of the United States, signed by his father, only surviving parent, or legally appointed guardian, in the presence of at least one witness.

3. PAY, ALLOWANCES, AND PENSIONS.

All officers and enlisted men of the volunteer forces will be in all respects on the same footing as to pay, allowances, and pensions as officers and enlisted men of corresponding grades in the Regular Army.

4. REPORTS, RETURNS, ETC.

The same rules are provided for the rendering and final disposition of reports, returns, and muster rolls of volunteer organizations as now govern in the Regular Army.

5. LAWS, ORDERS, AND REGULATIONS.

The volunteer forces are subject to the laws, orders, and regulations governing the Regular Army, in so far as such laws, orders, and regulations are applicable to officers and enlisted men whose perma-

ment retention in the military service, either on the active or retired list, is not contemplated by existing law.

And no distinction shall be made between the Regular Army, the Organized Militia while in the service of the United States, and the volunteers in respect to promotion or the conferring upon officers and enlisted men of brevet rank, medals of honor, certificates of merit, or other rewards for distinguished service; nor in respect to the eligibility of any officer of the land forces, regular, militia, or volunteer, for service on any court-martial, court of inquiry, or military commission.

6. ORGANIZATION OF UNITS.

The organization of all mobile units of the line and of Signal troops will be the same as that prescribed by law and regulations for the Regular Army, including the same attached personnel of the Medical Department; that of all other units and of necessary adjuncts, whose organization is not otherwise provided for, will be as the President may direct.

The President may organize the land forces into brigades, divisions, and such higher units as he may deem necessary, and he may prescribe the composition of units higher than a regiment. The organization of brigades and divisions shown in the tables in Circular 19, Division of Militia Affairs, 1914, has been decided upon for the Organized Militia; and in case all the militia shall volunteer, the same organization will be used for the Volunteers.

He is authorized to provide, within such limits as may be prescribed by law, all officers and enlisted men of all grades and classes and the trained nurses, male and female, that may be necessary in the various arms, corps, and departments.

7. STRENGTH OF ORGANIZATIONS.

No organization will be accepted that is below the minimum prescribed by the President for the Organized Militia in time of peace, nor above the maximum prescribed by law for the Regular Army. For a company of Infantry these limits will be 65 and 150 men, respectively.

Exception is made, however, as has already been indicated, in favor of existing militia organizations, which may be accepted with only three-fourths of the minimum, or 49 men, for a company of Infantry; and the War Department has decided that the sanitary personnel attached to battalions and regiments of the Organized Militia, and organized as provided in the Tables of Organization, are to be regarded, for the purposes of transfer to the Volunteers, as a part of such battalions or regiments.

It has also been decided by the War Department that any existing organization of militia which desires to volunteer in another arm of the service will be accepted in that arm, with not less than three-fourths of the minimum prescribed strength thereof, and in advance of any other Volunteers of the same arm or class from the same State, Territory, or District.

8. RECRUITING RENDEZVOUS AND DEPOTS.

With a view to recruiting and maintaining all organizations of the land forces as near their prescribed strength as practicable, the necessary rendezvous and depots will be established by the Secretary of War and will be directly controlled by him. Here the recruits will be enlisted and trained. For the purposes of instruction and discipline, the troops at the recruit depots may be organized into companies and battalions, at the discretion of the Secretary of War. The noncommissioned officers and privates will be of such grades and numbers as the President may prescribe.

It is apparent that the recruits at the rendezvous and depots are intended to form a reserve battalion for each regiment or equivalent thereof of Regulars and Volunteers only; for the act also provides that in order to maintain the land militia organizations at their maximum strength the recruit rendezvous and depots in any State or Territory may, at the request of the governor thereof, enlist and train recruits for land militia in the service of the United States from such State or Territory.

All the officers required for such recruit rendezvous and depots will be Volunteers of the proper arm of the service.

IV. APPOINTMENT OF VOLUNTEER OFFICERS.

9. POWER OF APPOINTMENT.

All volunteer officers are appointed by the President, but the number and grade of such officers shall not exceed the number and grade of like officers provided for a like force of the Regular Army, and they will be subject to such assignment to duty and transfers as the President may direct.

The second proviso of section 5 of the volunteer law provides that no officer above the grade of colonel shall be appointed under the act. In the event of war Congress would probably be requested to repeal this proviso; otherwise, it would be necessary to invoke the volunteer law of 1898 for the appointment of general officers; and that law provided for no grade above that of major general.

10. FIELDS OF SELECTION.

The President may select the officers from the following classes:

(a) The Regular Army. But not to exceed one regular officer may at the same time hold a volunteer commission in any battalion of field artillery, engineer or signal troops; and not to exceed four in any regiment of infantry, cavalry, or field artillery, nor in any 12 companies of Coast Artillery, including their field and staff. The War Department has decided that the best interests of the Government require that advantage be taken of this proviso, as far as practicable.

(b) Those duly qualified and registered pursuant to section 23 of the militia law.

(c) The country at large.

(d) The Organized Land Militia of the District of Columbia.

(e) The Organized Land Militia of the several States and Territories, upon recommendation of the governors thereof; taking them as far as practicable according to population and from the localities whence the troops are recruited.

11. RECOMMENDATIONS OF GOVERNORS.

(a) Governors may recommend, for appointment by the President, officers of existing organizations of the Organized Militia volunteering with their respective organizations, who are qualified for such service, under regulations established by the War Department.

(b) Governors will also advise the War Department of the number and grades of vacancies in their Organized Militia volunteering, which they desire filled by detail from the Regular Army.

12. GENERAL CONSIDERATIONS.

In order that the lives of those patriotic citizens who may volunteer for service may be safeguarded and conserved and not risked under persons lacking in experience in the care of soldiers in camp and in battle, the War Department has decided and announced that the appointment to volunteer commissions will be made from those classes of our citizens who have had such experience; and that from those classes the selections will be made in the following order, viz:

(a) Persons who have had experience as commissioned officers in the Regular Army of the United States and ex-officers of volunteers of proved experience and efficiency.

(b) Noncommissioned officers of experience in the Regular Army.

(c) Persons who have had experience as commissioned officers in the militia.

(d) Persons who have qualified according to law under prescribed examinations to test their fitness to command and control men in the field.

(e) Graduates of educational institutions of military standing to which Regular Army officers are detailed as professors of military science under the law.

(f) Should the necessary number of volunteer officers required not be furnished from the above classes, the War Department will give civilians lacking in actual military experience an opportunity to appear for examination to test their fitness for commissions, before boards which the War Department proposes to create in the several States.

13. APPOINTMENT OF LINE OFFICERS, ASSIGNMENT TO DUTY, AND TRANSFERS.

All officers of the line below the grade of brigadier general will be commissioned in an arm of the service and not in any particular regiment or other organization. Officers of each arm may be assigned to or transferred from organizations in that arm as the interests of the service may require by orders from the Secretary of War. Promotion will be lineal in the arm of the service and not regimental as in volunteer forces heretofore raised.

14. APPOINTMENT OF STAFF OFFICERS.

The President is authorized to appoint such number of staff officers, of grades authorized by law for the Regular Army, as he may find necessary for the various staff corps or departments.

But their number, including those of Organized Militia called into the service of the United States, shall not exceed 1 officer for each 200 enlisted men of the combined militia and volunteer forces in the service of the United States. And in any staff corps or department the number of staff officers in any grade shall not exceed the proportionate authorized strength of regular officers of corresponding grade in that corps or department of the Regular Army.

This provision for staff officers is inadequate. No special provision is made for General Staff officers, the necessary number of whom will be detailed as in the Regular Army. The Medical Corps alone would require approximately 1.1 officers for each 200 enlisted men. The full quota of the other staff corps and departments, including the General Staff Corps, will be needed at once, while the maximum of medical personnel will not be needed until actual hostilities and campaigning are well under way.

Certain extra officers should be assigned to certain staff corps or departments, to be available for detail to the General Staff; other-

wise they must be detailed from the line, whose officers can not be spared from their exacting duties. The General Staff officers should be of the grade of captain and higher, according to the duties to be performed. When, however, volunteer-staff appointments to the higher grades are made in the Engineers, Signal Corps, or Ordnance Department, in which there are many officers of lower grades, there must also be appointed the proportionate number of officers of the lower grades, for some of whom there are no duties laid down in the Tables of Organization.

A scheme of assignment of volunteer staff officers has been prepared by the War Department, in which all staff corps and departments are fully provided for, except the Medical Department, and in the event of War Congress would be requested to supply the deficiency in medical personnel.

15. APPOINTMENT OF CHAPLAINS.

Chaplains may be appointed at the rate of not to exceed one for each regiment of volunteer infantry, cavalry, or field artillery and for each 12 companies of coast artillery that are raised.

16. SPECIAL PROVISION REGARDING MEDICAL OFFICERS.

It is provided that medical officers of Volunteers detailed as consulting surgeons shall not exercise command over hospitals to which they may be assigned to duty, except that by virtue of their commissions they may command all enlisted men; and it is required that no officer shall be detailed for duty as a medical inspector, except he be experienced in military sanitation.

17. APPOINTMENT OF OFFICERS FOR RECRUIT RENDEZVOUS AND DEPOTS.

To provide the necessary officers for the recruit rendezvous and depots that may be established by the Secretary of War and directly controlled by him, the President is authorized to appoint officers of Volunteers of the proper arm of the service of number and grade not exceeding for each organized regiment or its equivalent 1 major, 4 captains, 5 first lieutenants, and 5 second lieutenants.

18. APPOINTMENT OF OFFICERS FOR A RECRUITING SYSTEM.

To organize a recruiting system, after Congress shall have authorized the raising of volunteer forces, the President is authorized to employ retired officers, noncommissioned officers, and privates of the Regular Army, either with their rank on the retired list or, in the case of enlisted men, with increased commissioned rank; or he may appoint and employ retired officers below the grade of colonel,

with increased volunteer rank of not to exceed one grade in the case of an officer and not above that of first lieutenant in the case of retired enlisted men. Such officers and enlisted men so employed shall not be eligible for transfer to the field units. When such employment ceases they will be mustered out, and they revert to their retired status.

19. TEMPORARY APPOINTMENTS AND PROMOTIONS OF REGULAR OFFICERS.

Regular officers appointed to and accepting higher volunteer commissions do not thereby vacate their regular commissions nor prejudice their lineal or relative standing in the Regular Army, but in grades not above that of colonel they create thereby temporary vacancies which will be filled by temporary promotions or appointments from the next lower grade or by details under sections 26 and 27, act of February 2, 1901.

Such temporary appointments or promotions will be for a term that will not extend beyond the termination of the war or the passing of the imminence thereof, as indicated in the proclamation of the President; and upon the expiration of such term all officers will be discharged from such temporary appointments or promotions and will revert to their lineal or relative standing under their permanent commissions.

V. TRAINING OF VOLUNTEERS.

The training of volunteer troops must begin without delay after their induction into the service. No time must be lost. It should begin at the company rendezvous, without waiting for complete mobilization.

Under our traditional policy of relying principally for national defense upon citizen soldiers, the larger part of our land forces will not be fully trained at the outbreak of war. It is more than probable that we shall have to employ some of them with little or no training as soon as they can be assembled in suitable units.

The amount and character of the training will at first be directly proportional to the time consumed, provided a rational scheme be followed. How much time will be available it is impossible to predict. It is reasonable to assume, however, that in the event of a war with an over-sea enemy it will be the time required for our enemy to establish at least a partial control of the sea sufficient to open the way for landing of expeditionary forces.

We may consider ourselves extremely fortunate if we are allowed for training three months from the date of declaration or imminence of war before our new troops will be required to take up the more

serious work of actual fighting. In all probability the time will be less than three months. Under present laws our first volunteers must be a part of our first line of defense, and no volunteers may be raised until war is actual or imminent, and until Congress shall have authorized such action.

The existing militia organizations will have had some training, but as the authority of training the militia is reserved by the Constitution to the States, respectively, there will always be a lack of uniformity in training, both in character and amount. To secure participation in the appropriations made by Congress for the support of the militia it is required that the militia shall assemble for drill, instruction, and target practice 24 times, and shall have five days of practice marches or camps of instruction each year. Assuming $1\frac{1}{2}$ hours as the drill period, 36 hours, or the equivalent of 6 training days, will be used for drills, etc., and 5 days for practice marches or camp—11 days in all per year, 33 days in an enlistment period of 3 years. If there be a full attendance at all exercises, the average man will have had $1\frac{1}{2}$ years' service and about one-half of this training, or about 17 days. When it is remembered that the organizations should be brought to war strength by adding to each company of infantry from 85 to 101 recruits (an addition of from 130 to 206 per cent to the strength thereof), it may be said that the militia will be practically untrained, and that the same procedure must be followed with them as with the new volunteers.

Our most recent experience in raising volunteers was in 1899, when 24 United States Volunteer regiments of Infantry were raised for service in the Philippine Islands. The reports of the colonels of those regiments show that before proceeding to the Philippine Islands the regiments averaged training periods of about seven weeks. Although these regiments strongly impressed officers who had the opportunity to observe their fine organization and splendid material, it would be unsafe to take that period as a standard for future training of volunteers; for it must be borne in mind that, those regiments not being called upon to face trained troops under trained officers, their training and discipline were never put to a test sufficiently severe to base thereon definite conclusions. Furthermore, although there could be little opportunity for real training on transports while en route, there was necessarily much time on the voyage that could be and was utilized in certain classes of instruction that had been postponed purposely, and there was much opportunity for the development of the forces of discipline and cohesion. The period of instruction and training, from the beginning to the time the regiments were put into the firing line, was approximately three months.

Another consideration bearing upon the length of time that these regiments were actually in training is the splendid material that was available. Every regiment was commanded by a regular officer, and practically all the field officers were Regulars. The remaining commissioned and enlisted personnel comprised the pick of ex-Regulars and of some 250,000 ex-Volunteers from the War with Spain, who had had about a year of training in addition to any prior military service.

The present war in Europe will in time furnish valuable data on the subject of the time required and the best methods to be pursued in the training of new troops. Such information regarding the new armies of Great Britain will be particularly valuable to us, as their troops, like our own, serve under voluntary enlistment. It is significant, however, that the policy of the war office has been to refrain from sending new troops to the Continent for service in the first line until they have had a minimum of six months' training; and the scarcity of trained officers and noncommissioned officers has necessarily had its effect upon the character of the training given.

It goes without saying that the more the men know about the art of war the better. Time will not, however, be available to teach them everything, even if they were capable of absorbing it. Careful distinction must be made between those things which it is *essential* that every soldier should know and those things which it is *desirable* that he should know. Every effort should be made and all available time devoted at first to teaching the essentials, while later, if time be available, the instruction and training may be extended in other directions.

Imperfectly trained troops must pay with their lives for their own mistakes and for those of imperfect leadership. The more efficient the leadership the better will be the training, and the better the training the fewer will be the mistakes, and the less will be the ultimate cost of any results sought to be obtained by the war.

Any system of training, however good in itself, will fail to bring the desired results unless there are available a sufficient number of trained instructors, officers, and noncommissioned officers. The blind can not lead the blind. A partial appreciation of the difficulties likely to be encountered will follow from a consideration of the number of trained officers that will be available for this most important work of all. For the four field armies proposed under Circular 19, Division of Militia Affairs, 1914, there will be required approximately 11,200 officers of the mobile arms, upon which the brunt of the fighting will fall. There are about 2,900 officers of those arms now authorized for the Regular Army, and of these at least one-fourth will be on foreign service, not available for service at home.

Many Regular officers will be selected for the higher commands, both in the line and in the staff, with increased volunteer rank.

It is apparent, therefore, that for the training of our regular mobile forces at home and of our 400,000 volunteers, requiring more than 11,000 officers, probably less than one-fifth will be fully trained officers. The efficiency of the Regular troops must be conserved, and to that end care must be exercised that not too many of their officers be selected for duty with the Volunteers.

The indicated shortage in trained officers will exist in approximately the same degree in trained noncommissioned officers. If our existing laws could be so amended as to provide one-half million trained men for our first line and an equal number of partially trained men for the second line, such action would result in a longer period of training for our volunteers, and the proportion of trained leaders, officers and noncommissioned officers, available for their training would be vastly increased.

Until we know how much time we have, which is the same as saying until the emergency arises, we can not establish a definite system of training that would meet all requirements. But there have been prepared and are available well-digested systems of intensive training for new troops, extending over periods of 10 weeks and more, and covering only the essential things that all soldiers must be taught. It is not the intention to publish any of these systems at the present time, but they will be kept up to date and published when needed.

VI. MOBILIZATION OF VOLUNTEERS.

The mobilization points or camps are indicated for each State in the tables contained in Circular 19, Division of Militia Affairs, 1914, referred to above. These points have been selected by the State authorities, with the approval of the War Department, and are intended primarily for the mobile organizations of the Organized Militia, but as these may be received into the volunteer service the mobilization points will be available for both militia and volunteers under the first call and for other volunteers under a later call.

Mobile organizations will be assembled at the State camps; but it may happen that under extreme emergency organizations will be sent directly from their company rendezvous to certain other designated points, where their mobilization will be completed. Organizations belonging to the Coast Artillery reserves will be sent directly from their company rendezvous to coast-defense commands to which they may be assigned, and will there complete their mobilization.

Plans have been prepared for temporary buildings, or cantonments, at the mobilization camps so that all personnel and animals may be suitably sheltered. The buildings will be constructed as funds be-

come available, and suitable arrangements will be made for terminal facilities, lighting, water supply, sanitation, etc., so that the camps may be ready to receive troops when necessary.

For mobilization in winter, if the cantonments have not been constructed, use will be made of armories or other suitable buildings.

Under the militia law, when the military needs of the country arising from the necessity to execute the laws of the Union, suppress insurrection, or repel invasion, can not be met by the regular forces, the militia must be called out in advance of any volunteers; and as in the event of war this condition would generally obtain, two calls will be necessary, one for the militia and one for the volunteers. It is not contemplated, however, that there shall be two musters.

When the call for the Organized Militia is issued, the orders requisite to give effect to the call must be issued through the governors of States. Department commanders will have charge, under general directions from the War Department, of all matters pertaining to the mobilization of troops in their respective departments. From the date that mobilization of the Organized Militia is ordered all officers on militia or college duty in a State affected by the call will be under the orders of the commander of the department in which they may be serving.

The details of the mobilization of volunteers will be generally the same as those now prescribed in the rules and regulations laid down for the mobilization of the Organized Militia, particularly under the first call for volunteers. It is only in the formation of such new volunteer units as may be desired that any considerable departure from those rules and regulations will be necessary; and such departure results from the fact that no State official not in the military service of the United States may induct persons into such service.

While, as stated, the mobilization, both of militia and of volunteers, will be under charge of department commanders, the services of State authorities should be utilized as far as practicable in the many details prior to the actual induction of volunteers into the service of the United States, where there is no interference with the control vested in department commanders.

It is especially desirable that the existing militia organizations shall, when received into the volunteer service, comprise the best possible personnel. Prior to their muster into the service of the United States the militia is under State control, and the War Department has announced that governors will be requested to eliminate all undesirables, the inefficient, and the physically unfit, and to proceed with the recruitment of organizations to the maximum strength.

Following the call for militia the organizations thereof will assemble at their company rendezvous, and a canvass will be made to determine what individuals desire to volunteer. The undesirables,

the inefficient, and the physically unfit will be discharged from the State service by the governors. Individuals and organizations, otherwise eligible but not desiring to volunteer, may still be held to Federal service as militia, subject to the constitutional limitations regarding such service.

Recruiting will proceed as rapidly as possible. Prior to the muster in of the militia recruiting is a State function and is governed by State laws. In some States the regimental and company commanders are designated as recruiting officers, being, presumably, most interested in keeping the organizations at the required strength. Upon muster into the Federal service, however, each command will have its own recruiting officer, detailed under Army Regulations; or recourse may be had to the recruit rendezvous and depots established and controlled by the Secretary of War.

Governors will be requested to order to the State mobilization camps, or to such other points as may be necessary, the necessary staff officers of militia. These officers, if not actually included in the call for militia, or received into the volunteer service, may be retained in the State service or discharged, at the discretion of the governor. State medical officers, especially, should be assembled at suitable points and mustered into the Federal service, so that they may, as Federal officers, be available to assist in mustering in the remainder.

The War Department will order to the mobilization camps and to other designated points the necessary mustering officers and medical examiners.

The necessary eliminations having been made, such organizations as meet the requirements of section 3 of the volunteer law will now be ready for muster into the volunteer service. They will be sent to the State camps or other designated points where their muster into the service of the United States will be accomplished under the Regulations for Mustering United States Volunteers. None but those who desire to volunteer will be taken from the company rendezvous.

Officers of accepted militia organizations can be mustered into the volunteer service only when the mustering officers have been notified that they have been appointed by the President. With other volunteer officers, no muster in is necessary, as the acceptance of commission and taking the oath of office mark their entry into the service. All officers, as soon as appointed, should be sent at once to their commands, so that the work of organization and training may be expedited.

Organizations that have not complied with the standard for physical examination prescribed for the Regular Army will be so examined prior to muster in. Those that have complied with that standard will be examined immediately after muster in

State authorities are required to keep on hand at all times, either at the various armories or in suitable storehouses, a sufficient supply of arms, uniforms, and equipment to completely equip for the field the minimum number of men prescribed by the President for each militia organization, so that upon being called into the service any organization will be completely equipped from stores on hand without calling upon the War Department for assistance.

The War Department will inform each governor of the maximum strength to which organizations will be recruited under the call for militia, and the Federal supply departments concerned will at once ship without requisition to the senior mustering officers at the proper State mobilization camps sufficient arms, equipment, and clothing to equip organizations to the war strength ordered.

The State authorities will be responsible for the rationing and transportation of the Organized Militia from the time of arrival at the company rendezvous until arrival at the mobilization camp. Federal funds for this purpose will be placed to the credit of local Federal disbursing officers by the department quartermaster of the proper territorial department as soon as the call is issued.

An expenditure of 75 cents per ration is authorized for each day of actual service prior to arrival at mobilization camps. Thereafter rations in kind will be issued.

All serviceable military property in the hands of the Organized Militia which may be needed for camps or for field service, including wheel transportation, whether it be Federal or State property, if of standard pattern or quality, will be brought to the mobilization camps.

All expense of the mobilization will be paid, or reimbursed in kind, by the United States.

Following the proclamation of the President calling forth the Volunteers, the War Department will communicate to the governors, etc., the quota for each State, etc., the number of existing organizations of Organized Militia that will be received into the volunteer service, and the number of new units that it is desired to raise. They will be requested to assist in the formation of the new units, in so far as they may be competent to render such assistance.

In addition, if it be found necessary or desirable, the War Department may designate in orders the rendezvous of the various new regiments or other organizations, and the territorial limits within which recruiting for each is to be conducted.

The method that has been followed in the past with satisfactory results, is to receive groups of men that desire to enter the Volunteer service as a body. If they are found qualified physically, and are not below the minimum nor above the maximum strength prescribed, the group may be mustered in as a body.

It may, however, be necessary to designate officers to proceed to specially indicated points and raise the new organizations. In this case, individual recruiting will be necessary; and for this purpose the recruiting rendezvous and depots may be charged with making enlistments, such service to be supplemented by the assignment, under Army Regulations, of officers of the new organizations as they become available by appointment.

When officers or recruits arrive at the designated regimental or other rendezvous, they will at once be assigned by the proper commander. Appointment of regimental and battalion staff officers and of noncommissioned officers will be made as authorized in Army Regulations.

As soon as any new organization is reasonably well filled up it will be sent to the proper mobilization camp to receive its equipment and complete its organization and training. As in the case of existing militia organizations, the Federal supply departments will ship, without requisition, either to the designated regimental rendezvous or to the proper mobilization camps, sufficient arms, equipment, and clothing to equip the new organizations at war strength.

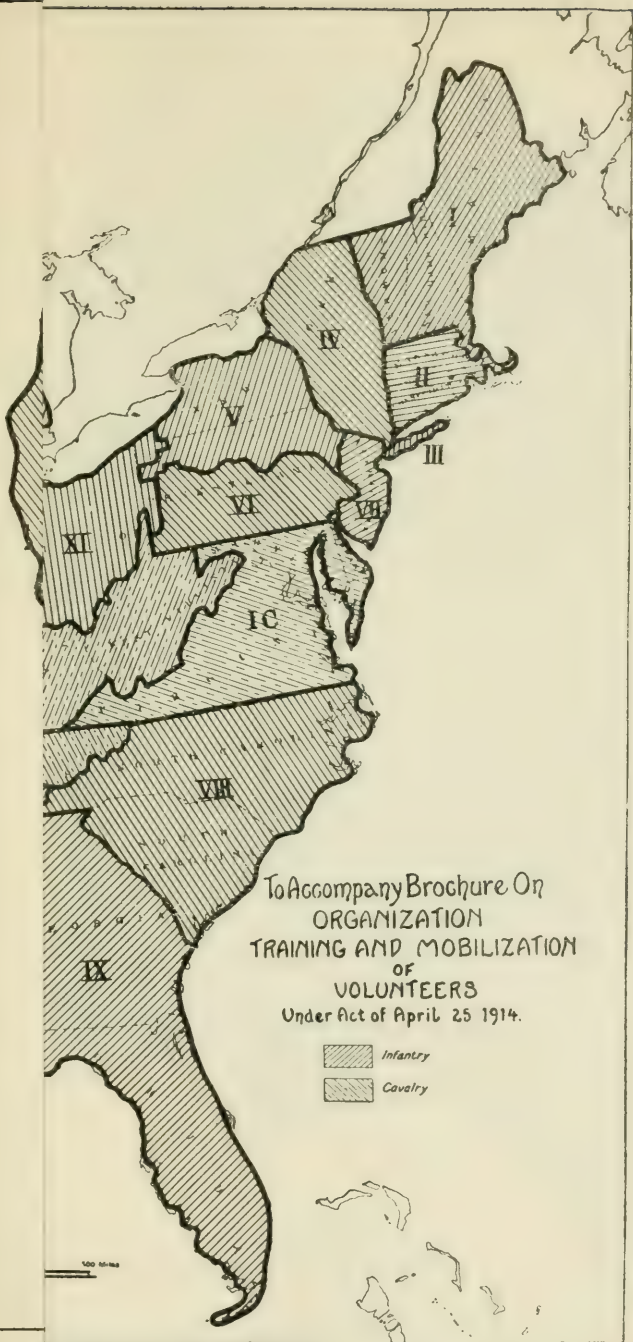
Pay and allowances begin, in the case of militia organizations, from the date of appearance at the company rendezvous; in the case of other Volunteers from the date of muster or of taking the oath of enlistment.

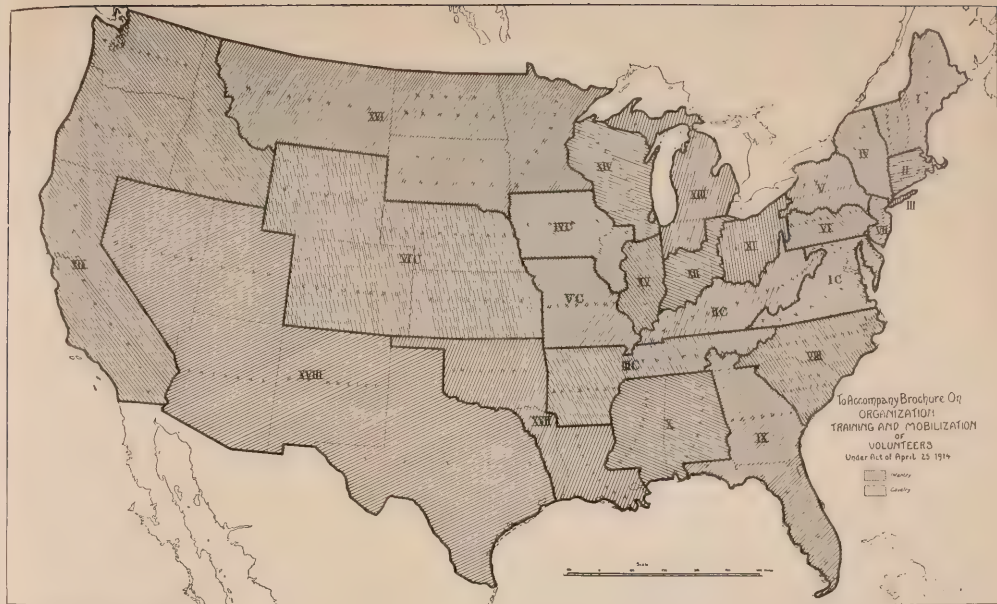
As soon as the mobilization in any State is complete, the volunteer organizations may be assembled with others at suitable concentration camps; and the mobilization camps thus vacated will be available for other Volunteers, new organizations, recruit depot troops, etc.

The time required to mobilize and muster existing militia organizations into the Volunteer service would be but a few days. The time required to recruit such organizations to full strength and to raise new organizations would depend upon the popularity or otherwise of the war, general trade conditions, etc., and can not be readily predicted.

The procedure under a later call for Volunteers would be along the same lines as indicated above, but owing to the absence with the first-line troops, of practically all trained officers and noncommissioned officers, the actual organization, training, and mobilization would be accomplished with confusion and delay, and under the most adverse conditions.

The Division of Militia Affairs has prepared and issued to State authorities Suggestions for Mobilization of Volunteers, covering in greater detail the points indicated above.





OUTLINE OF PLAN FOR MILITARY TRAINING IN PUBLIC SCHOOLS OF THE UNITED STATES

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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OUTLINE OF PLAN FOR MILITARY TRAINING IN PUBLIC SCHOOLS OF THE UNITED STATES.

I. INTRODUCTION.

In paragraph 6, Statement of a Proper Military Policy for the United States, it was shown that our military system should be able to furnish at the outbreak of war 500,000 trained and organized mobile troops, and to have available not less than 500,000 more 90 days thereafter. In addition, to supply losses and wastage in war, it is considered that, after the outbreak of hostilities, the system should provide a plan for raising and training 500,000 more.

To prepare for this task requires us to use every available means of educating the young as to their future duties as citizens.

If our democracy is to endure it must "recognize as its primary standard of duty the obligation of the individual man and woman to sacrifice themselves for the whole community in time of need."

The necessary elementary instruction that every young American should have in order to be prepared when the time comes to play his part in the national defense can be given in the public schools. Moreover, this can be done in such a way as to enlist parental approval, because of the manifest improvement of the scholars in physique, deportment, and obedience to authority at home as well as at school.

The object of the prescribed course of instruction is to inculcate high ideals and correct views on the duties of the citizen to the State. The training given is along military lines, but is so conducted as to encourage initiative and individuality, to correct defects and develop natural gifts, and to teach self-control by showing the value of obedience to superior authority. The old method of "breaking the will" by insisting on blind unreasoning obedience to arbitrary rules is replaced by one showing how to use the individual will in attaining the concerted effort known as "teamwork," which is the secret of efficiency, and which is dependent upon a conscious and willing obedience to a superior directing authority. Those who learn how to obey fit themselves to direct and by practicing self-control become imbued with the fundamental principle underlying good citizenship.

This is not a theoretical scheme. It is a practical system carefully worked out by Lieut. E. Z. Steever, United States Army, and applied with marked success in the public high schools of the State of Wyoming. It has been designated the "Wyoming plan," and its distinctive features are outlined in what follows.

II. THE WYOMING PLAN.

The Wyoming school authorities hold:

1. That good citizenship involves a willingness on the part of each able-bodied youth to make such effort and sacrifice as will prepare him for his obligations and duties as a citizen.

2. That this preparation embraces the following:

- (a) Military preparation.
- (b) Moral preparation.
- (c) Civic preparation.
- (d) Business preparation.
- (e) Educational preparation.

(A) MILITARY PREPARATION.

It is unsound to assume that any system of training its adolescent youth will remove from the nation the further responsibility of training its manhood.

Trained youth can not take the place of trained manhood. Youths make imitation, but not real, soldiers.

A thorough preliminary military training of its adolescent youth has been recognized in primitive as well as modern civilizations as the first step in the greater training of the tribe or nation.

With the civilized as with the primitive youth the "game" is the medium of all successful training. "Competition" is to youth what "security" is to old age.

According to the Wyoming plan all cadets are organized into competition units.

Leaders take "turnabouts" choosing the members of their units, so that each unit (squad, platoon, or company) is made up of an equal number of strong, medium, and weak lads.

After final choosing-up these units are fixed and can not be added to nor subtracted from.

All the work is done by competition units.

There are:

- Wall-scaling units.
- Infantry drill units.
- Troop leadership units.
- Scholarship units.
- Field firing units.
- Camp and field units.

Sponsors are elected from the girls in the mixed school and assigned to the competition units. The sponsors are in every sense members of the cadet organization. They attend all drills, are the leaders in all social functions, and while they do not actually drill the sponsors are entitled to and receive such individual rewards as may be won by their units.

Medals, ribbons, and distinctive marks on the uniform are given each member of a winning unit, the sponsor, of course, included.

Each cadet organization is based on the voluntary enlistment plan. The cadet classes are held generally during and not after school hours, and credit toward graduation is awarded therefor.

Cadet tournaments are held during the school year between the different high schools, to which the public is invited, and at which are held infantry drill, wall-scaling, field firing, and camp and field and troop leadership competition "games."

From the Wyoming experience is deduced the following system of training, adapted to the adolescent American youth. Local conditions will necessarily modify the application of this system, but the general principles on which it is based will obtain in any part of the United States, and will permit the evolution of a practical course suited to local conditions:

1. Cut the school year into separate, short, intensive training periods, working up through preliminary to final competition dates, with the fixed competition units.

2. September 1 to December 31, wall-scaling and calisthenic events; minimum of drill, maximum of body building.

3. January 1 to February 28, troop-leadership competitions, 12-inch Gettysburg war-game map. Include military policy of the United States.

4. January 1 to February 28, minimum of drill, maximum of gallery practice, group competitions.

5. March 1 to May 7, minimum of drill, maximum of range practice, and field-firing competitions.

6. May 8 to June 15, minimum of drill, maximum of camp and field problems, competitive between high schools.

7. All through school year, commencing in the spring and running through the following fall and winter, take boys into camp each week-end and harden them to the rigors of camp life. Teach them sanitation, cooking, woodcraft, simple field engineering, plains-craft, castramentation, sketching, scouting, patrolling, the service of security and information, and qualify them as guides in their own immediate surrounding territory.

8. Summer camp immediately after closing of school, 14 days.

DISCUSSION OF COURSE IN MILITARY PREPARATION.

The organization that puts into effect the "game" idea differs fundamentally from the modern American athletic system. The cadet leaders choose up each in turn so that each fixed competition unit represents a certain proportion of strong, of medium, and of weak lads.

In football and basket ball and track events, only the *few physically fit take part*. In this system each squad represents an average and *every boy takes part*. There is as much "in it" for the weak as for the strong, and the survival of the fittest units, whether they be squads, platoons, or companies, gives the competition spirit.

(B) MORAL PREPARATION.

A nation stands or falls, succeeds or fails, just in proportion to the high-mindedness, cleanliness, and manliness of each succeeding generation of men.

In the Wyoming system the fundamental factor is the competition between equally balanced units. The individuals are forced by public opinion amongst their fellows to go into training, and this training means clean, moral youths. It is shown conclusively in the various competitions that clean men morally are the surest kind of winners. Smoking and immoral practices must go. Under the fiercest kind of competition, and a new and fascinating interest in life, the adolescent youth is better enabled to negotiate that difficult period of life.

(C) CIVIC PREPARATION.

It is almost a fundamental principle of correct military organization that the leader should not be voted for. The Wyoming system is not intended to make soldiers. The Wyoming schoolmasters are of the opinion that soldiers can only be made from mature manhood, and that the preparation of the adolescent youth should be such that when he reaches manhood he may then be made into the highest type of soldier. Hence the objection to voting for leaders does not obtain in the cadet organization, whereas the objection is perfectly valid in a military organization.

The cadet leaders are chosen at the beginning of each year by vote of the older cadets. The leaders are selected on merit, very much as the captain of the football team is selected for his merit. It has been noticeable that on the first organization, boy politics elect a certain percentage of popular but inefficient leaders, whose very inefficiency is later a terrible punishment to the members of their own units. The stress of competition soon brings out the real

leaders. The cadets never repeat their mistake. After the first election they take steps to insure a very wise and careful selection of leaders.

This civic lesson can not be wholly lost to them in years to come, when they are called upon as citizens to elect the leaders of their city, county, State, and National Governments.

(D) BUSINESS PREPARATION.

Teamwork and efficiency are prime requisites in the business life of to-day.

The soldier game can be made the keenest, as well as the most fascinating of all games, and efficiency is a necessity if a competition unit is to win. Not only must each man be worked to the limit of his capacity, but each competition unit leader must analyze his men and fit each to his proper place. The leaders are always leading and learning efficiency.

III. RECOMMENDATIONS.

1. That school boards throughout the United States be encouraged by the War Department to institute, in their school systems, a citizenship training similar to that outlined above.

2. That the proper authority request Congress to authorize the detail of United States Army officers as instructors in public school systems.

3. That tentage and field equipment of obsolete or modern pattern be issued to school boards under bond¹ in the same manner that Krag rifles and ammunition are now furnished.

THE PENSION ROLL AS AFFECTED BY THE WAR WITH SPAIN IN 1898

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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THE PENSION ROLL AS AFFECTED BY THE WAR WITH SPAIN IN 1898.

1. INCEPTION OF THE PRACTICE OF PENSIONING DISABLED SOLDIERS AND SAILORS.

The practice of pensioning soldiers incapacitated by injuries received in active service and of providing relief for their dependent families began long before the Revolutionary War. In 1636 the Pilgrims at Plymouth enacted a law providing that any man sent forth as a soldier and who returned maimed should be maintained competently by the colony during the remainder of his life. In 1644 the Virginia Assembly passed a disability pension law, and later a provision for the relief of indigent members of the families of soldiers who should be killed. In 1676 a standing committee of the General Court of Massachusetts Bay held regular meetings to hear the applications of wounded soldiers for relief. After the union of Massachusetts Bay and Plymouth Colonies, under the charter of 1691, the Province continued to make provision for the relief of disabled soldiers out of the public treasury. In 1718 Rhode Island enacted a pension law which provided that every officer, soldier, or sailor employed in the service of the colony, who should be disabled from getting a livelihood for himself and family or other dependent relatives, should have his wounds looked after at the colony's charge, and should have an annual pension for the maintenance of himself and his dependents. This law further provided that if any person who had the charge of maintaining a wife, children, parents, or other dependent relatives should be slain in the colony's service, these relatives should be maintained while unable to provide for themselves.

The first national law on pensions was passed August 26, 1776, long before the independence of the Colonies was established. This law provided half pay for life or during disability to any officer, soldier, or sailor losing a limb in any engagement, or being so disabled in the service of the United States as to render him incapable of earning a livelihood. On August 24, 1780, a resolution was adopted extending the above half-pay provision to the widows or orphan children of such officers as had died or should die in the service. This was the first national law in behalf of widows and orphans. On April 23, 1782, Congress provided that soldiers who were sick or wounded or unfit for duty should receive a discharge and be pensioned at the rate of \$5 per month.

It is, therefore, evident that the feeling that soldiers incapacitated in the service of the Government should be maintained thereafter at the expense of the Government is not of recent growth, but existed in the very early days of the colonization of this country.

2. THE WAR WITH SPAIN—BEGINNING AND DURATION.

The War with Spain began, officially, on April 21, 1898, and ceased, officially, on April 11, 1899. Actual hostilities were in progress between the land forces during this period as follows:

Cuba, June 24 to July 11, 1898.

Philippine Islands, July 31 to August 13, 1898.

Porto Rico, July 25 to August 12, 1898.

On February 4, 1899, the Philippine insurrection began and hostilities continued until April 27, 1902. During this period the Boxer outbreak in China occurred, necessitating combined operations on the part of the powers concerned for the relief of their legations at Peking. The actual hostilities in which our land forces took part in this campaign lasted from July 13 to August 13, 1900.

It thus appears that active hostilities participated in by our troops were in progress from June 24, 1898, to April 27, 1902, a period of 3 years, 10 months, and 6 days (1,401 days). The Philippine insurrection ended officially on July 4, 1902. The official period of hostilities, then, extended from the beginning of the War with Spain to the end of the Philippine insurrection, a period of 4 years, 2 months, and 14 days (1,535 days).

In the records of the Bureau of Pensions this entire period is considered, so far as pensions are concerned, as the War with Spain, and all applications for pensions for disabilities incurred during the period from April 21, 1898, to July 4, 1902, are credited to the War with Spain.

3. FORCES EMPLOYED.

The first Volunteer regiment for service in the War with Spain was mustered into the service of the United States on May 1, 1898, and the last Volunteer (United States) regiment was mustered out of service on July 25, 1901. There were thus Volunteers in service continuously for a period of 3 years, 2 months, and 25 days (1,181 days).

At first glance it would appear that the number of troops employed in the War with Spain could easily be ascertained from official records. This is, however, far from the truth. For the purposes of this paper we must know the number of individuals employed during the official period of the war in order to ascertain the number of pensionable persons coming into existence during that period. A man who has served an enlistment in one organization

and then reenlisted in that or some other organization constitutes *one* possible pensionable individual. But our records may show this individual as *two*, or even more, since no tabulations have yet been made which will show how many of the reenlistments in the Regular Army were by individuals who had had previous service in some organization during the period covered by the War with Spain. Nor has any tabulation been yet made that will show how many men enlisting in the Regular Army had had previous service in the Volunteers, nor men enlisting in the Volunteers who had had previous service in the Regular Army or Volunteers. So it is evident that it will be impossible, with the data available, to ascertain exactly how many *individuals* were employed in the War with Spain. To take the total enlistments and reenlistments for the Regular Army the force in service on May 1, 1898, the totals for the Volunteers as shown by the muster-out rolls, would give us a total of 451,970, which is, of course, vastly in excess of the number of individuals employed in the War with Spain.

The published reports of the Bureau of Pensions give an estimate of the individuals employed in the land forces in the War with Spain as follows:

War with Spain (proper)-----	312, 000
Philippine Insurrection-----	139, 438
Boxer trouble in China-----	6, 713

As no tabulations covering this subject have yet been made in the office of The Adjutant General it is not known by what method these figures were arrived at. The total, 458,151, is undoubtedly too great. Even if we deduct the 6,713 men credited to the "Boxer" troubles in China (all of whom are accounted for, of course, in the Philippine force) we will have a total of 452,561, which is still much too great.

4. TOTAL ENLISTMENTS AND REENLISTMENTS—NUMBER OF INDIVIDUALS IN SERVICE.

From the published records of The Adjutant General's Office we find the following:

(a) Regular Army enlistments and reenlistments:

May 1, 1898, to June 30, 1898-----	18, 880
June 30, 1898, to June 30, 1899-----	62, 175
June 30, 1899, to June 30, 1900-----	19, 549
June 30, 1900, to June 30, 1901-----	22, 479
June 30, 1901, to June 30, 1902-----	36, 964
Total enlistments and reenlistments-----	160, 047
Strength Regular Army May 1, 1898-----	30, 268
Total Regular Army-----	190, 315

But we know that this number does not give us the actual number of individuals employed in the Regular Army, since it contains

reenlistments and a certain number of men who had seen previous service in the 1898 Volunteers. Without tabulated data we can only guess at what the actual number of individuals serving in the Regular Army during the period of the War with Spain really was; but it is believed that even a guess will bring us nearer the truth than to take the figures as they stand.

The strength of the Regular Army on May 1, 1898, was 30,268. The total number of enlistments and reenlistments between May 1 and June 30, 1898, was 18,880. This gives us a total for the Regular Army on June 30, 1898, counting enlistments and reenlistments, of 49,148. The total enlistments and reenlistments between June 30, 1898, and June 30, 1902, was 141,167. This number includes many reenlistments and a certain number of ex-Volunteers of 1898. From the records of The Adjutant General's Office we find that the largest force in the Regular Army for any one month during the period between June 30, 1898, and June 30, 1902, was 88,362. While this number contains many reenlistments and a certain proportion of ex-Volunteers of 1898, there were also during this period a total of 78,561 men killed, died, discharged, retired, and deserted, whose places had to be filled. It seems probable, therefore, that if we estimate that two-thirds of the men enlisted in the Regular Army during this period represent the number of individuals in service who had not had previous service during the War with Spain, we will be not far from the truth. This would give us 94,112. We would have, therefore, for the Regular Army for the period from April 21, 1898, to July 4, 1902, a total of *about* 143,360 individuals.

Another method of estimating the number of individuals employed in the Regular Army was as follows:

Original enlistments of 1896 to serve until 1898-99-----	5, 676
Original enlistments of 1897 to serve until 1899-1900-----	5, 332
Original enlistments of 1898 to serve until 1900-1-----	24, 248
Original enlistments of 1899 to serve until 1901-2-----	43, 780
Original enlistments of 1900 to serve until 1902-3-----	15, 588
Original enlistments of 1901 to serve until 1903-4-----	25, 688
Original enlistments of 1902 to serve until 1904-5-----	26, 026
Total -----	146, 338

A mean of the results arrived at by the two methods would give us 144,849, which is perhaps nearer the truth than either result taken separately and as near the actual number as we can arrive with the data now at our disposal.

When we come to the Volunteers our data are better, but still by no means complete.

The muster-out rolls of volunteer organizations show the number of all individuals who at any time served therein.

(b) Volunteers of 1898.

As there were no reenlistments in the 1898 volunteer organizations, and as there were no men in these organizations who had had pre-

vious service in the War with Spain, the totals as shown by the muster-out rolls will give us the number of individuals serving therein. This number was 223,235.

(c) Volunteers of 1899.

The muster-out rolls of the organizations of 1899 (the United States Volunteers) show a total of 38,420 men who served in these organizations. However, this number contains a large number of men who had had previous service in the War with Spain, so that we can not use this figure as it stands.

It is a matter of common knowledge that there was a large number of men in these organizations who had previously served either in the 1898 volunteers or in the Regular Army during the War with Spain period. Just what this number was we have no means of telling with certainty, since no tabulation from the records on the subject has yet been made. In the report of The Adjutant General's Office for 1901 it is estimated that at least 65 per cent of the volunteers raised in 1899 (United States Volunteers) had had previous service during the War with Spain. If we accept this statement as accurate we will have to deduct the number corresponding to this percentage from the total number of 1899 volunteers. This would, then, give us only 13,447 individuals in these organizations who had not seen previous service and who had, therefore, not already been counted either in the Regular Army or in the 1898 volunteers.

As a result of all our estimates and guesses, then, we have the following:

Total number of individuals employed in the Regular Army-----	144, 849
Total number of individuals employed in the 1898 Volunteers-----	223, 235
Total number of individuals employed in the 1899 Volunteers-----	13, 447
Total for the War with Spain-----	381, 531

The charge has been made many times that the number of applications for pensions filed by survivors of the War with Spain or by their dependents was unduly large in comparison with the forces employed and with the battle casualties. Let us see to what extent this charge is justified. In order to make any comparisons with other wars we must endeavor to arrive at the total number of possible pensioners.

5. NUMBER OF INDIVIDUALS WHO ACQUIRED AN ACTUAL PENSIONABLE STATUS BY DATE OF DISCHARGE OR MUSTER-OUT.

It is evident that the "dependents" of those men who were killed or who died in service and those men themselves who were discharged for disability or found with disability upon muster-out, acquired an actual pensionable status.

The records of The Adjutant General's Office show that the total mortality from all causes for the period May 1, 1898, to June 30, 1902, was:

Regular Army -----	5, 870
Volunteers -----	6, 025
Total -----	11, 895

A computation made in the Office of the Commissioner of Pensions in connection with the records of the War of the Rebellion shows that 36 per cent of those dying did not leave pensionable dependents. As this percentage will probably hold good for the War with Spain, we must deduct from the above total of those who died in service 4,282, in order to ascertain the number of individuals who attained a pensionable status by date of discharge or muster-out.

Referring again to the records of The Adjutant General's Office we find that the number of men discharged for disability during this period was:

Regular Army -----	8, 103
Volunteers -----	4, 862
Total -----	12, 965

The number of 1899 Volunteers found with disability at date of muster-out was 586. The records do not show the results of the examinations of the 1898 Volunteers at muster-out.

The above figures, then, will give us a total of 21,164 persons who had attained an actual pensionable status at date of discharge or muster-out.

There were wounded during the period under consideration 2,645 Regulars and 2,032 Volunteers. In figuring the number acquiring an actual pensionable status this figure is disregarded, because it is not known how many of this number are included in those discharged for disability or how many wounds constituted actual pensionable disability.

6. NUMBER OF PENSION APPLICATIONS FILED.

Table 1 shows the number of applications received on account of all wars from June 30, 1899, to June 30, 1905. Also the number of pensions granted during this period. The total number of applications received for this period was 373,083, and the pensions granted, 297,222, a percentage of pensions granted to applications filed of 79.6 per cent.

Table 5 gives the number of applications filed on account of the War with Spain credited to Army invalids and to widows, etc., from June 30, 1899, to June 30, 1905, and for the War of the Rebellion, from June 30, 1862, to June 30, 1868. We can therefore obtain com-

parative figures for these two wars for the first seven years after the beginning of hostilities in each.

(a) War of the Rebellion (first seven years) :	
Claims filed—	
Invalids -----	134, 300
Widows, etc -----	162, 454
Total -----	296, 754
Claims granted—	
Invalids -----	84, 427
Widows, etc -----	116, 499
Total -----	200, 926
Percentage of pensions granted to claims filed, 67.7 per cent.	
(b) War with Spain (first seven years) :	
Claims filed—	
Invalids -----	69, 687
Widows, etc -----	10, 248
Total -----	79, 935
Claims granted—	
Invalids -----	18, 510
Widows, etc -----	5, 416
Total -----	23, 926
Percentage of pensions granted to claims filed, 29.9 per cent.	
The percentage of invalid pensions granted to claims filed was :	
(a) War of the Rebellion, per cent-----	62. 8
(b) War with Spain, per cent-----	26. 5
The percentage of widows, etc., pensions granted to claims filed was :	
(a) War of the Rebellion, per cent-----	71. 7
(b) War with Spain, per cent-----	52. 8

Among the causes for this great difference between claims filed and pensions granted the two which are, undoubtedly, of most importance are:

(1) That the Army in the War with Spain constituted only a very small percentage of the total population, while in the War of the Rebellion it constituted a very large one, and (2) that many Spanish War soldiers and their dependents claimed pensions who were not entitled to them. This latter fact will appear more clearly as we proceed.

Table 3 shows the applications received year by year from June 30, 1899, to June 30, 1913, credited to the War with Spain. This includes both the Army and the Navy, but as the number for the Navy is undoubtedly small it may be disregarded.

It is a remarkable fact, as will be seen from the table, that the number of claims filed up to June 30, 1899, only 14 months after hostilities began, was larger by 2,829 than for any other year. The next largest number was for 1901, 14,157. This latter year, of course, included many of those mustered out of the 1899 Volunteers. Without doubt the vast majority of the applications filed during 1899 pertain to the period covered by the hostilities with Spain, proper—April 21, 1898, to April 11, 1899. Of this number, also it is evident that few came from men serving in the Philippine Islands, since almost the entire Infantry of the Regular Army was in the Philip-

pine Islands by June 30, 1899, and the 1899 Volunteers had not yet been organized. In addition to this, those organizations of the 1898 Volunteers sent to the Philippine Islands in the early expeditions had not yet been returned to the United States. While our information is by no means complete, we can find the approximate number to whom the claims filed up to June 30, 1899, should be credited.

From what has been said above, it is evident that the vast majority of the 16,986 claims filed by June 30, 1899, must have come from (1) the 1898 Volunteers (less the organizations of this force actually in the Philippine Islands), (2) the men of those regular organizations serving in the Philippine Islands who were discharged for any cause before their organizations were sent to the Philippines, (3) the men of the regular regiments which did not go to the Philippine Islands and were either still in service or who had been discharged and were in the United States, (4) also members of the organizations of the 1898 Volunteers serving in the Philippines who had been discharged before June 30, 1899, (5) also the dependents of those men who had died in service before June 30, 1899. Let us see if we can make any estimate of what this number of possible applicants was.

The total regular force which served in Cuba and Porto Rico during the hostilities with Spain was approximately 17,688. Of this number it is estimated that only about 25 per cent went to the Philippine Islands with their organizations in the early part of 1899, the remaining 75 per cent having either died or been discharged for various reasons. Thus about 13,251 men of the Cuban and Porto Rican forces (or their dependents) were in a position to file applications for pensions by the date in question. Of the 1898 Volunteers there were 18,819 serving with their organizations in the Philippine Islands. This number deducted from the total number of 1898 Volunteers leaves, in the United States, 204,416. The number belonging to the various organizations serving in the Philippines who died or were discharged before June 30, 1899, and who (or their dependents) were in a position to file claims for pensions, was 6,872. Combining these figures we have 13,251 Regulars and 211,288 Volunteers, a total of 224,539 individuals who, on or before June 30, 1899, were in a position to file applications for pensions. Since the number of applications filed up to that date was 16,986, the percentage of applications filed to the total number of individuals in a position to apply for pensions was 7.5 per cent, certainly a very large percentage within 14 months after hostilities had begun.

In connection with the large percentage of Spanish War soldiers who filed applications for pensions, the report of the Commissioner of Pensions, dated September 10, 1901, says:

Much criticism has been visited upon Spanish War soldiers by reason of the promptness with which they filed claims for disabilities and by reason of the large percentage of claims filed considering their short service and the absence of battle-field casualties as compared with the Civil War. Only a little over three years have passed since hostilities began, and yet claims amounting to about 20 per cent of the number of men enlisted for the Spanish War have been filed.

It is believed that the percentage given by the Commissioner of Pensions is too large. Apparently he has considered only the 1898 Volunteers, which would give a percentage of 19.3, which is, he says, nearly 20 per cent. There were, however, a large number of men in addition to the 1898 Volunteers who were in a position to file applications which the commissioner does not take into account. However, that the percentage of claims filed for pensions was much larger than it should have been there is no doubt.

The Bureau of Pensions has roughly tabulated the number of applications filed from 10 of the 1898 Volunteer regiments up to June 30, 1900. Table 4 shows this, together with other data, with respect to these regiments. The total number of claims filed from these organizations was, roughly, 6,000, or 19.9 per cent of the total number of applications filed for the War with Spain up to that date. The percentage of the strength of these 10 regiments to the strength of the 1898 Volunteers was 5.8 per cent.

By reference to Tables 4 and 5 we find that these 10 regiments filed a total of 6,000 applications up to June 30, 1900, out of a total number of applications credited to the War with Spain to that date of 30,025. The total number of individuals enlisted in these 10 regiments was 13,076, or about 4 per cent of the number of individuals employed in the War with Spain up to that date. That is, with a strength of only about 4 per cent these regiments filed applications amounting to 19.9 per cent of the total number of applications filed up to June 30, 1900. Only three of these regiments saw any active service, and of these only 9.6 per cent of their total strength acquired a possible pensionable status by reason of death or discharge for disability. Yet their percentage of applications filed to their strength was 47.4 per cent. In the seven regiments which saw no active service, 4.3 per cent had acquired a pensionable status by date of discharge and are credited with 45.2 per cent of the total number of applications filed by the 10 regiments. That is, while 5.3 per cent more per total strength in those regiments which had had active service acquired an actual pensionable status by date of muster out, their actual applications for pensions amounted to only 2.2 per cent more than those regiments which had seen no active service at all. It is evident, then, that so far as these particular regiments are concerned, the number of killed, died of wounds, and wounded had little, if any, bearing on the number of applications for pensions filed. Nor is it believed that these particular regiments differed materially

from other regiments of the 1898 Volunteers. It seems impossible then, to escape the conclusion that the 1898 Volunteers were very prompt to file applications for pensions, and that an unusually large percentage of them to total strength did file them. To those who were familiar with the conditions obtaining at the time of muster-in and muster-out of these organizations, as the Commissioner of Pensions remarks in the above-mentioned report, the cause for this state of affairs is not difficult to find. Before the Volunteers were mustered in, they were examined physically, and it was explained that one of the reasons for the examination was to prevent the soldier from filing a claim for pension for a disability supposed to have been contracted in service when he really had the disability before he entered the service. The impression left on the mind of most men was, undoubtedly, that the Government expected them to make an application for pension eventually, else why this care to safeguard itself against false claims. In addition to this they were all, of course, familiar with the fact that a large percentage of the soldiers of the Civil War were drawing pensions. But what brought the applications in so promptly was this: At every camp where Volunteers were mustered out, a great swarm of agents lay in wait and, in many instances, actually fought with each other for the privilege of handling the application for a pension, which they used every endeavor to persuade each discharged soldier to make. These agents received, at this period, \$25 for each pension claim which was allowed. As the soldier knew that the law provided that he should receive a pension should he have contracted any disability in service, and believing that the Government expected him to make an application should he be entitled to it, it was probably not a very difficult matter for these agents to persuade many of the discharged men to try for a pension whether he was suffering from a disability or not. The wonder is that more men did not apply for pensions than actually did. That thousands applied without proper grounds is evidenced by the fact that the percentage of Army *disability* pensions granted to claims filed for the period to June 30, 1905, credited to the War with Spain, was only 26.5 per cent, while the percentage of pensions granted to claims filed for all other classes for the period above cited was 91.5 per cent.

7. NUMBER OF PENSIONERS ON THE ROLLS.

Table 6 shows the total number of pensioners on the rolls credited to all wars for each year from June 30, 1899, to June 30, 1914, and the number of pensioners on the roll for the same period credited to the War with Spain.

The total number of pensioners of all classes and for all wars on the rolls on June 30, 1914, was 785,239. The total number credited

to the War with Spain on this date was 28,910. The number of invalid pensioners credited to the War with Spain was 24,250. The number of invalid pensioners credited to the Army alone for the War with Spain was 23,511 and of dependents 4,403. For this period the highest number of invalid Army pensioners was in 1914, 23,416. The highest number of dependent Army pensioners was in 1909, 4,845. The greatest annual increase for pensioners for the War with Spain was in 1901, 4,658. The yearly gain for total pensioners, War with Spain, has continuously decreased since 1908. In 1914 there were 87 less pensioners on the rolls for the War with Spain than in 1913. There is a continuous increase in the number of *invalid* pensioners for this war from 1899 to 1915. The increase in 1915, however, was only 124.

After giving this brief résumé of the condition of the Spanish War pension rolls it will be necessary to see if we can make some sort of comparison of the proportion of pensioners on the rolls to the number of individuals employed in the last two years.

8. PERCENTAGE OF PENSIONERS ON THE ROLLS 16 YEARS AFTER THE BEGINNING OF HOSTILITIES FOR (a) WAR OF THE REBELLION AND (b) WAR WITH SPAIN.

To a greater degree than we found it to be in the War with Spain is the number of individuals employed in the War of the Rebellion a matter of estimate. Many estimates have been made, some of them differing very widely. That made in the report of the Commissioner of Pensions for 1882 is probably as reliable as any of them, and we will use the figure deduced in that report for the purposes of the following computations. The report gives the number of individuals employed as 2,046,969. To this figure is added the 16,442 men in service in the Regular Army and Navy at the outbreak of the war, giving a total of individuals employed of 2,063,391. This figure, of course, includes the Navy, but as there are no data available which will give us the number of individuals employed in the Navy, the total figure will have to be employed in the following computation.

For the War with Spain we will use the figure deduced in section 4 of this paper, 381,531. This, of course, includes only the Army, but as we have no data on the Navy this figure will have to be used.

In order that the comparison may be as fair as possible, a period has been selected which is the same number of years after the beginning of hostilities for each war. The number of years selected is 16, which will give us the year 1877 for the War of the Rebellion and 1914 for the War with Spain. As no "service" pension laws had been passed up to 1877, the laws under which pensions were granted for both wars were practically the same at the period selected for each war.

(a) War of the Rebellion.

The total number of pensioners borne on the roll on June 30, 1877, was 214,693. This includes all pensioners on the rolls except the pensioners for the War of 1812. A certain number must be deducted, therefore, for the War with Mexico and the Indian wars. In no place in the report of the Commissioner of Pensions for 1877 does this number appear. In House Report No. 64, Forty-fifth Congress, second session (1878), an estimate of the number of pensioners for the War with Mexico is given as 11,000. In the report of the Commissioner of Pensions for June 30, 1914, the number of survivors for the War with Mexico and for the Indian wars is given as practically the same. It is probable, therefore, that there were about the same number for each of these wars on the roll in 1877. If, then, we deduct 20,000 from the total of 214,693 as given above, we will *probably* come very near the number of pensioners for the War of the Rebellion borne on the rolls on June 30, 1877. This will give us a figure of 194,693.

Using this figure will give us a percentage of pensioners to number of individuals employed of 9.5 at a period of 16 years after the beginning of hostilities.

(b) War with Spain.

The total number of pensioners on the rolls for the War with Spain on June 30, 1914, was 27,915. This would give us a percentage of pensioners to the number of individuals employed of 7.3 at a period 16 years after the beginning of hostilities.

It would appear, then, that, in proportion to the number of individuals employed (as nearly as this number can be estimated), the number of pensioners on the roll for the War with Spain 16 years after the beginning of hostilities was less than that for the War of the Rebellion at the same length of time after the beginning of hostilities for the war, the percentages standing 9.5 for the War of the Rebellion and 7.3 for the War with Spain.

9. AMOUNTS DISBURSED FOR PENSIONS.

The amount disbursed for pensions for the War of the Rebellion for the year ending June 30, 1914, was \$163,377,551.53. The amount disbursed for pensions for the War with Spain for this year was \$3,907,510.53.

The total amount disbursed for pensions proper for all wars up to June 30, 1914, was \$4,633,511,926.71, and the total cost of administration was \$127,938,472.79, or a total cost to the Government for our pension system of \$4,761,450,399.50. (Report, Commissioner of Pensions, 1914.)

10. PROBABLE FUTURE COST OF THE PENSION LIST FOR THE WAR WITH SPAIN.

It only remains to endeavor to make some estimate as to what the future cost of the pension system for the War with Spain is likely to be.

In the nature of things this must be a very rough sort of a guess. By the use of the "mortality tables" in common use by life insurance companies we can ascertain the approximate date when the last survivor will have died, since we know the average age at which they entered the service. But we have no such information with regard to the ages of the dependents. Again, no one can forecast the action of Congress in regard to pensions. Up to this date no "service" law has been passed for the War with Spain, and it is possible that none will be. If we judge the future action of Congress by what its action has been in the past, however, we are justified in expecting that such action will eventually be taken.

For the wars prior to the War with Spain service-pension provisions were passed as follows: War of 1812 (14 days' service), on March 9, 1878; War with Mexico (60 days' service), on January 29, 1887; War of the Rebellion (90 days' service), on May 11, 1912.

That is, in the case of these three wars service-pension provisions were passed an average of 50 years after the ending of hostilities. The sentiments of our people with respect to the pension system and political methods remaining the same, we may, then, reasonably expect a service-pension bill for the survivors of the War with Spain to be passed about, say, 1950. If we grant that this will occur, we can make at least a rough estimate of the number of survivors who will still be living on that date and the approximate amount that the pension list will cost.

The total number of individuals estimated to have been employed in the War with Spain was 381,531. From this number we must deduct the number of those who deserted during the war, since neither they nor their dependents are entitled to pensions. This number was 17,599. This will leave at the end of the war 363,532 possible pensioners. By the use of our "mortality tables" we will find that there should be living in 1950, 124,692 survivors, since 238,840 will have died. However, it is possible, though not probable, that all of these survivors (less a percentage to be deducted later) will leave surviving pensionable dependents. A calculation made by the Commissioner of Pensions in 1882 in connection with the War of the Rebellion shows that 36 per cent of those dying do not leave pensionable dependents. In order, then, to ascertain the number of pensionable individuals living in 1950 we must deduct 85,982 from this total. We will then find that we may have in 1950, 277,550 possible pensioners still living. However, all of these will not apply for pensions, nor will they all be living.

The largest amount paid out for pensions for the War of the Rebellion in any one year was in the year 1913. So that 52 years after the beginning of hostilities the "high tide" of pension disbursements was reached for the War of the Rebellion. In that year the total number of pensioners on the roll for all wars was 820,200, of which number 762,331 were credited to the War of the Rebellion, which would be 36.9 per cent of the total number of individuals employed in that war. The amount disbursed for pensions proper for the War of the Rebellion for the year 1913 was \$164,897,872.48, which would make the average annual value of a pension amount to \$216.30. The total cost for administration and maintenance of the pension system for the year 1913 was \$2,543,246.39. This would make the per capita cost per pensioner amount to \$3.10 for that year.

With the above data as a basis we can roughly calculate the cost of the War with Spain pension roll 52 years after the beginning of hostilities in that war, bearing in mind that we are supposing that the same conditions as to longevity and laws will obtain as have been found to exist for the War of Rebellion pensioners.

In 1950, then, we would have 140,785 pensioners of the War with Spain still on the rolls. To them would be paid a total of \$30,451,795.50 in pensions. The cost of administration and maintenance for the War with Spain for this year would amount to \$436,433.50, making a total disbursement for the year 1950 for this war of \$30,888,229.

On the same basis, then, the total amount disbursed for pensions for the War with Spain, up to and including the year 1950, would be \$677,832,376.82, and for administration and maintenance, \$10,242,457.98, which would make a total cost to the Government, for this war to and including 1950, of \$688,074,834.80.

TABLE 1.—All wars.

Table showing the total number of applications for pensions filed, total number of pensions granted, total number of pensioners on the roll, and the total amount paid for pensions proper on June 30 of each year from 1899 to 1914, inclusive (from reports of the Bureau of Pensions):

Year.	Applica- tions filed.	Pensions granted.	Total pensioners.	Amount paid for pensions.
1899.....	53,881	37,077	991,519	\$138,355,052.95
1900.....	51,946	40,645	993,529	138,462,130.65
1901.....	58,373	44,868	997,735	138,531,493.34
1902.....	47,965	40,173	999,446	137,504,267.99
1903.....	52,325	40,136	969,545	137,759,653.71
1904.....	55,794	44,296	994,762	141,093,571.49
1905.....	52,841	50,027	998,441	141,142,861.33
1906.....	(1)	(1)	985,971	139,000,288.25
1907.....	(1)	(1)	967,371	138,155,412.46
1908.....	(1)	(1)	951,687	153,093,086.27
1909.....	(1)	(1)	946,194	161,973,703.77
1910.....	(1)	(1)	921,083	159,974,056.08
1911.....	(1)	(1)	892,098	157,325,160.35
1912.....	(1)	(1)	860,294	152,986,433.72
1913.....	(1)	(1)	820,200	174,171,660.80
1914.....	(1)	(1)	785,239	172,417,546.26

¹ No data.

TABLE 2.—*War with Spain.*

Table showing applications for pensions filed, pensions granted, and number of pensioners on roll on June 30 of each year from 1899 to 1914, inclusive, for the *Army* for the War with Spain (from reports of Bureau of Pensions):

Year.	Applica- tions filed.	Pensions granted.	Number pension- ers.	Paid for pen- sions.
1899:				
Invalids.....	15,009	125	117	\$8,852.41
Widows, etc.....	2,551	178	165	16,972.06
1900:				
Invalids.....	12,038	801	822	145,460.54
Widows, etc.....	1,383	710	845	170,562.64
1901:				
Invalids.....	12,814	2,795	3,344	644,315.04
Widows, etc.....	1,834	1,240	1,981	476,914.68
1902:				
Invalids.....	10,210	3,441	6,282	1,121,499.79
Widows, etc.....	1,395	884	2,727	536,452.50
1903:				
Invalids.....	7,728	3,415	8,798	1,468,368.56
Widows, etc.....	1,282	936	3,488	634,126.10
1904:				
Invalids.....	6,152	4,013	11,946	2,147,332.08
Widows, etc.....	938	885	4,187	825,983.17
1905:				
Invalids.....	5,736	3,920	15,138	2,457,638.71
Widows, etc.....	865	583	4,540	806,604.92
1906:				
Invalids.....	(1)	(1)	17,038	2,508,428.09
Widows, etc.....	(1)	(1)	4,715	787,952.60
1907:				
Invalids.....	(1)	(1)	18,393	2,533,410.75
Widows, etc.....	(1)	(1)	4,775	789,997.06
1908:				
Invalids.....	(1)	(1)	19,857	2,698,394.73
Widows, etc.....	(1)	(1)	4,840	797,024.38
1909:				
Invalids.....	(1)	(1)	21,264	} 3,820,169.80
Widows, etc.....	(1)	(1)	4,845	
1910:				
Invalids.....	(1)	(1)	22,063	} 3,807,919.91
Widows, etc.....	(1)	(1)	4,817	
1911:				
Invalids.....	(1)	(1)	22,644	2,999,776.96
Widows, etc.....	(1)	(1)	4,817	787,431.05
1912:				
Invalids.....	(1)	(1)	23,097	3,021,362.75
Widows, etc.....	(1)	(1)	4,734	789,612.03
1913:				
Invalids.....	(1)	(1)	23,416	3,130,866.45
Widows, etc.....	(1)	(1)	4,586	780,066.43
1914:				
Invalids.....	(1)	(1)	23,512	3,019,167.05
Widows, etc.....	(1)	(1)	4,403	726,829.98

¹ No data.

² Amounts paid for pensions for these years show only as total for Army and Navy combined.

TABLE 3.—*War with Spain.*

Table showing the number of applications for pensions filed on June 30 of each year credited to both Army and Navy for the War with Spain, from 1899 to 1913 (from data furnished by the Bureau of Pensions):

Year.	Applica- tions filed.	Year.	Applica- tions filed.
1899.....	16,986	1907.....	4,170
1900.....	13,039	1908.....	4,472
1901.....	14,157	1909.....	4,207
1902.....	11,055	1910.....	3,372
1903.....	8,546	1911.....	2,878
1904.....	6,774	1912.....	2,710
1905.....	6,309	1913.....	2,465
1906.....	5,302		

TABLE 4 (*War with Spain*).—*Showing certain data for ten 1898 volunteer regiments.*

[From Adjutant General's reports, reports of Bureau of Pensions and computations.]

Organizations.	Total strength.	Killed.	Died of wounds.	Died of disease.	Died of other causes.	Discharged for disability.	Deserted.	Wounded.	Days of foreign service.	Total days of service.	Per cent of killed and died of wounds to total strength.	Per cent of died of disease to total strength.	Per cent of discharged for disability to strength.	Number of applications for pensions to 1900.	Per cent of pensionable persons to strength.	Per cent of applications to strength.	Per cent of applications to total applications.	Per cent of strength to total strength, 1898 Volunteers.	Per cent of pensionable persons to strength at date of muster out.	Per cent claiming disability at date of muster out.	Per cent found with disability at date of muster out.	Average days of foreign service.	Average days of total service.
Second Massachusetts.....	993	5	4	88	1	2	15	43	83	178	0.9	8.8	.....	600	9.7	60.6	10	.....	.....	.....	.....	.....	.....
Ninth Massachusetts.....	1,334	.....	.....	114	1	.....	1	.....	57	199	.....	8.6	.....	750	8.7	56.2	12.5	.....	.....	.....	.....	.....	.....
Thirty-fourth Michigan.....	1,334	.....	.....	80	2	1	.....	.....	47	215	.....	6.1	.57	750	6.2	56.2	12.5	.....	.....	.....	.....	.....	.....
One hundred and fifty-ninth Indiana.....	1,369	.....	.....	11	.....	12	8	.....	.....	196	.....	.8	.87	600	1.6	43.8	10	.....	.....	.....	.....	.....	.....
One hundred and sixty-first Indiana.....	1,462	.....	.....	18	1	30	11	.....	107	292	.....	1.3	2	700	3.3	48	11.6	.....	.....	.....	.....	.....	.....
First Maryland.....	1,370	.....	.....	12	1	32	53	.....	.....	245	.....	.9	2.3	450	3.3	32	7.5	.....	.....	.....	.....	.....	.....
Fifth Maryland.....	1,341	.....	.....	20	.....	8	3	.....	.....	162	.....	1.4	.59	500	2	37.2	8.3	.....	.....	.....	.....	.....	.....
First volunteer cavalry.....	1,237	23	3	20	.....	9	12	104	48	118	2.1	1.6	.72	450	4.4	36.3	7.5	.....	.....	.....	.....	.....	.....
Fourth volunteer infantry.....	1,180	.....	.....	10	.....	50	31	.....	196	317	.....	1	4.2	500	5.2	42.3	8.3	.....	.....	.....	.....	.....	.....
Twentieth Kansas.....	1,456	22	11	35	2	145	4	130	296	534	2.2	2.4	9.9	700	14.6	48.7	11.6	.....	.....	.....	.....	.....	.....
The above 10 regiments combined.....	13,076	50	18	408	7	289	138	277	.....	.....	.52	3.1	2.2	6,000	5.9	45.8	19.9	5.8	.....	.....	.....	83	248
Totals for United States volunteer regiments of 1899 (25).....	38,420	248	66	1,015	153	775	1,193	762	603	678	.81	2.6	2	.....	.....	.....	.....	.....	7.4	18.3	2.6	216	249

TABLE 5.—*War of the Rebellion and War with Spain.*

Table showing the number of applications for pensions filed and of claims allowed, credited to the Army alone, for the first seven years after the beginning of hostilities in (a) War of the Rebellion and (b) War with Spain. Also the percentage of claims granted to claims filed.

[From reports of the Bureau of Pensions.]

(a) WAR OF THE REBELLION.

Year.	Claims filed.	Claims allowed.	Percentage of claims allowed to claims filed.
1862:			
Invalids.....	1,362	335	} 14.1
Widows, etc.....	1,000		
1863:			
Invalids.....	26,380	3,938	} 15.5
Widows, etc.....	22,327	3,630	
1864:			
Invalids.....	20,263	16,770	} 73.6
Widows, etc.....	32,627	22,198	
1865:			
Invalids.....	27,299	14,962	} 55.3
Widows, etc.....	44,404	24,693	
1866:			
Invalids.....	35,799	22,645	} 77
Widows, etc.....	28,732	27,076	
1867:			
Invalids.....	15,905	16,452	} 99.8
Widows, etc.....	20,265	19,660	
1868:			
Invalids.....	7,292	9,325	} 140
Widows, etc.....	13,099	19,242	
Total.....	296,754	200,926	67.7

(b) WAR WITH SPAIN.

1899:			
Invalids.....	15,009	125	} 1.7
Widows, etc.....	2,551	178	
1900:			
Invalids.....	12,038	801	} 11.2
Widows, etc.....	1,383	710	
1901:			
Invalids.....	12,814	2,795	} 27.5
Widows, etc.....	1,834	1,240	
1902:			
Invalids.....	10,210	3,441	} 37.2
Widows, etc.....	1,395	884	
1903:			
Invalids.....	7,728	3,415	} 48.2
Widows, etc.....	1,282	936	
1904:			
Invalids.....	6,152	4,013	} 69
Widows, etc.....	938	885	
1905:			
Invalids.....	5,736	3,920	} 68.2
Widows, etc.....	865	583	
Total.....	79,935	23,926	29.9

TABLE 6.—*War with Spain and all wars.*

Table showing the number of pensioners for the Army and the Navy in the War with Spain and the total number of all pensioners for all wars from 1898 to 1914. Also the percentages of pensioners for the War with Spain to the total number of pensioners.

[From Reports of the Bureau of Pensions.]

Year.	Pensioners, War with Spain.		Pensioners, all wars.	Percent-age pensioners, war with Spain, to total.	Year.	Pensioners, war with Spain.		Pensioners, all wars.	Percent-age pensioners, war with Spain, to total.
	Army.	Navy.				Army.	Navy.		
1898.....			993,714		1907.....	23,168	909	967,371	2.4
1899.....	282	17	991,519	0.03	1908.....	24,697	968	951,687	2.6
1900.....	1,667	88	993,529	.17	1909.....	26,109	986	946,194	2.8
1901.....	5,325	279	997,735	.56	1910.....	26,880	1,009	921,083	3.0
1902.....	9,009	456	999,446	.94	1911.....	27,461	1,029	992,098	2.89
1903.....	12,286	576	969,545	1.3	1912.....	27,831	1,019	860,294	3.3
1904.....	16,133	696	994,762	1.6	1913.....	28,002	1,010	820,200	3.5
1905.....	19,678	813	998,441	2.04	1914.....	27,915	995	785,239	3.6
1906.....	21,753	868	985,971	2.2					

TABLE 7.—*War with Spain and all wars.*

Table showing disbursements for pensions for each year from 1899 to 1914, inclusive, for the Army and for the Navy. Also the total disbursements for administration and maintenance of the Bureau of Pensions for the above-named years.

[From Reports of the Bureau of Pensions.]

Year.	Pensions, War with Spain.		Administra-tion and maintenance, all wars.	Year.	Pensions, War with Spain.		Administra-tion and maintenance, all wars.
	Army.	Navy.			Army.	Navy.	
1899....	\$25,824.47	\$2,782.34	\$4,147,517.73	1908....	\$3,495,419.11	\$158,703.87	\$2,800,963.36
1900....	316,023.18	16,882.07	3,841,706.74	1909....	¹ 3,820,169.80		2,852,583.73
1901....	1,121,229.72	53,996.04	3,868,795.44	1910....	¹ 3,807,919.91		2,657,673.86
1902....	1,657,957.29	80,488.99	3,831,378.96	1911....	3,787,208.01	164,043.24	2,517,127.06
1903....	2,102,494.66	101,589.55	3,993,216.79	1912....	3,810,974.78	160,111.27	2,448,857.31
1904....	2,973,315.25	133,616.53	3,849,366.25	1913....	3,910,932.88	160,235.54	2,543,246.39
1905....	3,264,243.63	145,754.91	3,721,832.82	1914....	3,745,997.03	161,513.50	2,066,507.15
1906....	3,296,380.69	145,775.84	3,523,269.51				
1907....	3,323,407.81	147,749.46	3,309,110.44	Total	\$36,831,408.51	1,633,243.15	.....

¹ Amounts for these years not shown separately for Army and Navy.

² Disbursements for 1909 and 1910 not in this total.

Total, Army column.....	\$36,831,408.51
Total, Navy column.....	1,633,243.15
Total, Army and Navy, 1909.....	3,820,169.80
Total, Army and Navy, 1910.....	3,807,919.91
Total, Army and Navy.....	46,092,741.87

TABLE 8.—*War with Spain.*

Table showing percentages, from the close of hostilities to June 30, 1914, of "invalids," "widows, etc.," and total pensions granted each year, to the total number of individuals employed in the War with Spain.

[From reports of the Bureau of Pensions and computations.]

Year.	Invalid pensioners.	Per cent to strength.	Widows, etc.	Per cent to strength.	Per cent total pensioners to strength.
1902.....	6,282	1.7	2,727	0.7	2.4
1903.....	8,798	2.3	3,488	.9	3.2
1904.....	11,946	3.2	4,187	1.1	4.3
1905.....	15,138	4.1	4,540	1.2	5.3
1906.....	17,038	4.6	4,715	1.2	5.9
1907.....	18,393	4.9	4,775	1.2	6.2
1908.....	19,857	5.3	4,840	1.3	6.6
1909.....	21,264	5.7	4,845	1.3	7.0
1910.....	22,063	5.9	4,817	1.3	7.2
1911.....	22,644	6.1	4,817	1.3	7.4
1912.....	23,097	6.2	4,734	1.2	7.5
1913.....	23,416	6.3	4,586	1.2	7.5
1914.....	25,512	6.3	4,403	1.1	7.5

TABLE 9.

Year.	Number of pensioners all wars.	Cost of administration.	Per capita cost per pensioner.	Number of pensioners War with Spain.	Cost of administration for War with Spain.
1899.....	991,519	\$4,147,517.73	\$4.18	282	\$1,178.76
1900.....	993,529	3,841,706.74	3.86	1,667	6,434.62
1901.....	997,735	3,868,795.44	3.87	5,325	20,607.77
1902.....	999,446	3,831,378.96	3.83	9,009	34,504.47
1903.....	969,545	3,993,216.79	4.12	12,286	50,618.32
1904.....	994,762	3,849,366.25	3.86	16,133	62,273.38
1905.....	998,441	3,721,832.82	3.72	19,678	73,202.16
1906.....	985,971	3,523,269.51	3.57	21,753	77,658.21
1907.....	967,371	3,309,110.44	3.42	23,168	79,234.56
1908.....	951,687	2,800,963.36	2.94	24,697	72,609.18
1909.....	946,194	2,852,553.73	3.01	26,109	78,588.09
1910.....	921,083	2,657,673.86	2.88	26,880	77,214.40
1911.....	892,098	2,517,127.06	2.82	27,461	77,440.02
1912.....	860,294	2,448,857.31	2.84	27,831	79,040.04
1913.....	820,200	2,543,246.39	3.10	28,002	86,806.20
1914.....	785,239	2,066,507.15	2.50	27,915	69,787.50

TABLE 10.—*War with Spain and all wars.*

Table showing the following on June 30 of each year from 1899 to 1914, inclusive. For the War with Spain: (a) Number of "invalid" pensioners, (b) number of "widows, etc.," (c) total gain to roll for the year, (d) total loss to the roll for the year. For all wars: Total number of pensioners on the roll.

[From reports of the Bureau of Pensions.]

Year.	War with Spain.				Total pensioners on roll.
	(a) Invalids.	(b) Widows, etc.	(c) Gain.	(d) Loss.	
1899.....	117	165	.....	.....	991,519
1900.....	822	845	728	.....	993,529
1901.....	3,344	1,981	4,658	.....	997,735
1902.....	6,282	2,727	3,784	.....	999,446
1903.....	8,798	3,488	3,277	.....	969,545
1904.....	11,946	4,187	3,847	.....	994,762
1905.....	15,138	4,540	3,545	.....	998,441
1906.....	17,038	4,715	2,075	.....	985,971
1907.....	18,393	4,775	1,415	.....	967,371
1908.....	19,857	4,840	1,529	.....	951,687
1909.....	21,264	4,845	1,412	.....	946,194
1910.....	22,063	4,817	771	.....	921,083
1911.....	22,644	4,817	581	.....	892,098
1912.....	23,097	4,734	370	.....	860,294
1913.....	23,416	4,586	171	.....	820,200
1914.....	23,512	4,403	.....	87	785,239

PERSONNEL VERSUS MATÉRIEL IN PLANS FOR NATIONAL DEFENSE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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PERSONNEL VERSUS MATÉRIEL IN PLANS FOR NATIONAL DEFENSE.

1. EFFECT OF VIEWS OF NOTED MEN ON PUBLIC OPINION.

Recently one of our most noted men in the field of science and invention was quoted in the press of the country to the effect that wars in the future will be fought by machines and not by men. The question of national defense is of such paramount importance at the present time that anything that a well and favorably known man says may have great influence in molding public opinion and thereby be productive of national good or national harm.

2. INFLUENCE OF PRESENT EUROPEAN WAR ON MILITARY POLICY.

It is believed that the deductions that have already been made from the present European war, and will be made in the future, will exert a vast influence in shaping our military policy. We should exercise, then, the greatest care that our conclusions are sound and not too hastily drawn. It is not the present war alone, but war in general that we must study, if we would reach sound conclusions. A conclusion that is drawn from a single example is almost sure to be wrong. For that reason the European war should be considered as only one of many wars that should furnish us the information in the light of which our military policy should be framed.

3. IMPORTANCE OF MATÉRIEL EXAGGERATED BY SPECIAL SITUATION IN FRANCE AND FLANDERS.

The great war now being fought in Europe has created in the minds of many influential people the fixed idea that matériel is everything in modern war and that personnel counts for but little. This idea has been fostered by a consideration of the situation as developed in France and Flanders, while the lessons to be learned from a study of the great campaigns in other theaters have been almost entirely overlooked.

4. NECESSITY OF MATÉRIEL AND LATEST MECHANICAL DEVICES IN WAR.

This is indeed an age of mechanics. The development in labor-saving machines and mechanical devices has been marvelous. The

machinery of war has kept pace with the development in the industrial field, and in many respects has even surpassed it. No one will contend that a mobile army not equipped with the most modern appliances of war—that is, magazine rifles, machine guns, field guns, aircraft, motor transport, etc.—can be successful in war. It is conceded that the United States should keep on hand matériel to fully equip an army of the size which we determine will be necessary to meet any of the first-class powers that are likely to attack us.

5. ARMS AND AMMUNITION REQUIRED FOR ONE MILLION MEN.

The following estimate of the supplies of rifles, machine guns, field guns, and ammunition that would be required by an army of a million men at the beginning of a campaign, under modern conditions, is based on a careful study of actual conditions in the European theater of war.

Army of 1,000,000.

Article.	Reserve supply at opening of war. (Estimated loss and expenditure during first four months of war.) ¹	Supply with troops for mobilization. ²	Monthly supply for first four months. ³			
			First month.	Second month.	Third month.	Fourth month.
Rifles.....	500,000	800,000	90,000	180,000	180,000	90,000
Machine guns.....	2,500	5,000	400	800	800	400
Cartridges.....	2,250,000,000	1,020,000,000	500,000,000	1,000,000,000	1,000,000,000	500,000,000
Field guns.....	3,000	6,000	500	1,000	1,000	500
Ammunition for field guns.....	10,000	2,000	2,000	2,000	4,000	2,000

¹ These supplies are to be maintained at these figures at all times during the war to provide a reservoir.

² In the case of the rifle cartridges the amount may be too small.

³ These amounts show the estimated expenditure for each of the first four months of the war.

⁴ Rounds per gun.

6. VITAL IMPORTANCE OF TRAINED PERSONNEL IN WAR.

A study of the above figures shows the vital importance of matériel in modern war and the hopelessness of any war in which we might be engaged with any country having a trained army, should we fail to be amply provided with such matériel. But many people believe that, if we are well supplied with the modern machinery of war, there will be no need of a trained personnel. There can be no greater fallacy nor one likely to bring greater disaster to the country if acted on to the extent that some influential men believe possible.

7. AN ARMY A COMPLICATED MACHINE.

It must not be forgotten that an army itself is the most marvelous and, at the same time, the most complicated machine connected with the carrying on of war, and to the degree of perfection with which

it is organized, trained, and equipped in every part and detail will depend victory or defeat.

8. TRAINED OPERATIVES IMPERATIVE FOR COMPLEX MACHINERY.

A chain is no stronger than its weakest link. It might as well be contended that one of the parts of a giant locomotive could be made of indifferent metal, as that an efficient army could be made up of an untrained personnel. As the weak part of the locomotive will sooner or later snap and break, and probably at the most critical time, so will an army of untrained or partially trained men go to pieces under the great shock of modern battle. As well might we say that it is as possible to go into the streets of one of our cities, or to our farms, pick up a lot of untrained men and set them to work with the intricate machinery of one of our great gun factories, as it is to put the same men to handling the complicated machines of modern war or to make them parts of that most complex of all machines, a modern army, and expect them to be successful against a highly trained and organized army of one of the first-class powers. As you would expect the gun factory to be speedily disorganized and disabled by such a proceeding, just so surely will an army of untrained or partially trained men come to disaster in the stress of war, and all the latest types of rifles, machine guns, high-powered cannon, aeroplanes, motor transport, and mountains of ammunition in its possession will not and can not save it.

9. CORRELATION AND INTERDEPENDENCE OF THE MOBILE ARMS.

The tendency to exaggerate the importance of matériel in modern war and to underrate personnel comes from the superficial conclusions which have been drawn from the observations that have been made of the present war in Europe, and, as stated above, the events in Flanders and France, likewise in the Dardanelles, where the war has settled to the condition of a siege on both sides, have formed the basis of most conclusions, while the operations in the eastern and Serbian theaters, which probably more nearly approach those of any war in which the United States might be engaged, have practically been overlooked.

To be sure, in this siege warfare the rôle of artillery takes on considerable importance, and only the large cannon can crush casemates buried several meters under the earth. To it falls almost the entire task of the preparation against an enemy who is at the same time too close and invisible and who thus escapes both the 75-millimeter shell and the bullet of the rifle. But as soon as this zone of siege warfare is crossed and space is opened, the bullet will recover its field of action beyond that covered by the 75-millimeter gun, the cannon of maneuver warfare. The war of 1914 has cruelly proved to us that between the preparation of the attack by the artillery and the execution

of this attack with the bayonet a period and a zone intervene where the infantry should be supreme, if it knows how to deliver a fire that kills. * * * This man is the king of the battle field; he rules it through his intelligent fire, his aimed bullets, which the accurate rifle has cured from being wild; he rules it by the work which completes and continues the preparations of the artillery and which will make easy the effect of the bayonet against an enemy already three-quarters annihilated. (Gen. Cherfils, French Army.)

In short, the rôle of the mobile arms has not changed materially; in other words, we must still have artillery to destroy the enemy's position, infantry to assault and drive him from it, and cavalry to pursue and complete his destruction. It should, moreover, be borne in mind that in point of time mobile operations precede the static and are therefore the first in order of preparation.

10. INFLUENCE OF MATÉRIEL ON ISSUE OF WAR—TRAINED PERSONNEL VITAL REQUISITE.

The influence of matériel on the issue of a war is usually much overemphasized. It floats on the surface of events, where it catches the eye of the superficial observer, ignorant of the profounder movements beneath. This tendency to overrate its influence is increased by the natural human inclination to attribute defeat to matériel rather than personal causes. It is natural for men who have spent all their time and best efforts in the field of science and invention to believe that the mechanical or matériel side of war is all-important, but there can be no greater mistake. A trained personnel has been a most vital requisite of armies in the past and will continue to be in the future.

The whole military history of the United States proclaims the truth of this.

11. RESULTS OF EMPLOYMENT OF UNTRAINED TROOPS BY UNITED STATES IN PAST WARS.

During the Revolutionary War the Colonies depended almost entirely on untrained or partially trained men. During the entire course of this war Great Britain employed not more than 150,000 men, yet the total number of British troops in the Colonies at any time was very much less; while the Colonies themselves used 395,858 men, notwithstanding which the largest force that Washington was ever able to assemble for battle at one time was about 17,000. Speaking of the unreliability of untrained or partially trained troops, he said:

Regular troops alone are equal to the exigencies of modern war, as well for defense as offense, and when a substitute is attempted it must prove illusory and ruinous. No militia will ever acquire the habits necessary to resist a regular force. * * * The firmness requisite for the real business of fighting is only to be attained by a constant course of discipline and service. I have

never yet been witness to a single instance that can justify a different opinion, and it is most earnestly to be wished that the liberties of America may no longer be trusted, in any material degree, to so precarious a dependence. (Washington.)

During the War of 1812 the United States employed 527,654 men, of whom only a small proportion were regular soldiers, and most of these were Regulars in name only, for the majority of regular regiments were organized after the beginning of the war, while Great Britain employed only 67,000 men, and never at one time had more than 16,000 men opposed to us on any field of battle. That we did not suffer a great disaster was undoubtedly due to the fact that Great Britain, during this entire war, was engaged in her gigantic contest with Napoleon, and used only the odds and ends of her military forces against us.

The Civil War was fought by volunteer troops on both sides, and it was not until the United States had spent several fruitless years in training her new armies and had suffered great losses in men and money that we had any real military success. Competent critics are of the opinion that had the United States had at the first Bull Run a brigade of Grant's veteran army that brought about the surrender of Lee at Appomattox there would have been no Civil War. The Confederates were almost as badly demoralized by their victory in this battle as the Federals were by defeat, but their victory gave time, priceless almost beyond anything else in war to an unprepared nation, to train and equip their armies. The money that was spent during that war and has been spent since on the aftermath of it (pensions, interest on the national debt, etc.) would have maintained and would now maintain an army that would insure the United States adequate defense.

12. EMPLOYMENT OF UNTRAINED TROOPS BY FRANCE DURING FRANCO-PRUSSIAN WAR.

The folly and futility of intrusting the interests of a nation in war to untrained or partially trained troops can not be better illustrated than by the experience of France following the surrender of the French Army at Metz in 1870.

Marshal McMahon surrendered the army of Chalons on September 2; Marshal Bazaine surrendered the army of the Rhine at Metz on October 27. * * * The war should have ended then, but there were hundreds of thousands of patriotic men left in the country, and there were statesmen then, as now, who thought nothing was necessary to create an army except to collect men and place arms in their hands.

At Paris the Empire had been overthrown and a provisional government established at Tours, with Gambetta as virtual dictator. This extraordinary man, whom no misfortune could conquer, set to work to raise armies, and with such herculean energy and ability that within a few weeks half a million men

had been assembled and fairly well equipped. Armies of 100,000 men were improvised almost overnight in the northwest and south. Unfortunately Gambetta found no leader of his own mold, and his tireless efforts finally went for naught.

Nor were the armies themselves ever competent. Time was lacking. The experienced officers were almost all prisoners of war. Organization was loose; supplies irregular or lacking; even the clothing was insufficient for a winter campaign. Poor discipline, wounds, disease, exhaustion, cold, and famine ravaged these vast armies of volunteers and conscripts and strewn the roads of France with their débris.

Unless it be the retreat from Moscow, there is no sadder picture in all history than one of these intensely patriotic but helpless bodies of men, driven about by the iron German veteran armies, suffering all possible miseries and wretchedly perishing to no purpose during the winter of 1870-71. They did not even have the satisfaction of inflicting heavy losses on the enemy, as did the armies of McMahon and Bazaine; but with little loss to the Germans sacrificed themselves by thousands in hopeless defeats and then struggled off along the roads, carrying disease to the villages which sheltered them and themselves perishing uncared for in the snow. Their history should be a terrible example for those who trust in new levies against experienced and efficient regular troops. (*Le Corps de Sante Militaire en France*, by Brice et Botteet.)

Anyone who believes that an army can be called into existence overnight or that the liberty of a country can be intrusted to an army of untrained or partially trained troops should read the pitiful story of these armies of Gambetta, from which the above is quoted.

13. RELATIVE IMPORTANCE OF MATÉRIEL AND PERSONNEL— STATEMENT OF GEN. VON BERNHARDI.

In an article contributed to the New York Tribune, Gen. von Bernhardi, author of "Germany and the next war," tell us what observations show to be true when he says:

It is constantly said on the other side that the success in a decisive manner depends on the quantity of munitions which is available, and that, aside from the superior masses, the technical means were instrumental to success. It is constantly emphasized that, in contrast to former wars, these factors are to-day determining. How little have men who hold this belief penetrated into the real spirit of the war! Munitions in sufficient quantities certainly are essential in warfare, and the technical means of warfare are certainly an important factor to success, and it is surely not of little importance that just in this respect, in the technique of war, we are in advance of our enemies. The superiority in artillery and in number is, of course, of prime importance. *The masses, however, win their decisive importance only when they have been trained in discipline and capability, are full of belligerent spirit, and are led by men who are thoroughly aware of what brings results in war and who are masters of their professions or, rather, art. Munitions and technical war materials achieve their full value only when they are used with a purpose and with valiant military spirit.*

14. LIMITATIONS OF A "RAW ARMY"—NAPOLEON. NUEVE CHAPELLE AN EXAMPLE.

With a raw army it is possible to carry a formidable position, but not to carry out a plan. (*Napoleon.*)

15. TIME REQUIRED FOR TRAINING NEW LEVIES—OPINION OF AN AMERICAN IN BRITISH ARMY.

The course of very intensive training prescribed for the new levies of the British Army at the beginning of the war contemplated having them ready for active service on the firing line in six months. But few of these men were sent to France with less than nine months' training. What was the reason for the change of plan of the British Army authorities, especially in view of the great and pressing necessity for troops in France? It is believed that it was found that troops with the six months' very intensive training which had been given them had neither the physical hardihood, the morale, nor the knowledge of the business of war which was absolutely essential to make progress against the intrenched troops opposing them. In this connection the following quotation from a letter written by an American now serving with the British Army in France, is pertinent:

In common with all of my comrades in one of the first units of Lord Kitchener's first citizen army, I believed that within a few weeks of enlistment we should be fighting side by side with the seasoned regulars of the first British expeditionary force. But after three months of hard work we began to appreciate the tremendous difficulties of the task we had in hand. During those three months we had worked from 5.30 in the morning until 4.30 in the afternoon every day in the week, Sunday excepted. And yet, at the end of that time, we had mastered only the fundamentals of squad, platoon, and company drill and some elementary knowledge of battle formations and of the use of our rifles. We were no more cohesive than so many grains of wet sand. We were still so many individuals, fretting under the restraints of discipline, and no more fit to be called soldiers than apprentices of three months are to be called mechanics.

Many of the men had been used to a healthy out-of-doors life, but even they were far from fit for the rigors and hardships of soldiering. How much less so were those indoor workers—the clerks, the shop assistants, the small merchants—fit for it. * * * But it was not until they had been through months of the hardest kind of work that they were physically efficient. Ten or twelve weeks' training would have never given these men the physical stamina enabling them to endure the terrible fatigues of a rapid strategic retreat like that from Mons. They would have dropped out on the roadside by tens of thousands, to be gathered in by the swiftly advancing enemy. * * * And so we went on from week to week and from month to month, and it was not until we had been trained for nine months that we were sent to the "Somewhere Trench" to take our part in the greatest war in history. * * * Four months of active service in France has convinced us how necessary, how vitally necessary, these nine months of preparation were. We had been unconsciously acquiring the ability to act instinctively, and this is unquestionably the most important, as well as the most difficult thing a soldier must gain.

Work must always be done with the sureness and promptitude of instinct. Otherwise, in the heat of battle, when all men are laboring under the stress of great excitement, the soldier is lost and useless. Battalions must be units in the strictest sense of the word, orders must be obeyed without a moment of hesitancy. * * *

With my own year of experience as a criterion, I am firmly of the opinion that, in order to become even fairly good soldiers, men must have at least a year of training. The will to be defenders is nothing unless there is back of it long and careful preparation. (Outlook, Nov. 3, 1915.)

With all this intensive training over a period of nine months or more, and some months' actual experience in war, the British forces have not up to the present time undertaken a sustained general offensive.

16. DEDUCTIONS FROM BRITISH LOSSES IN PRESENT EUROPEAN WAR.

That wars in the future will be fought by men, as they are at present and always have been, and that trained officers and men will be required in ever-increasing numbers is shown by the enormous losses sustained by the British Armies from the beginning of the war up to October 9, as announced officially by Premier Asquith to the House of Commons:

Total casualties, 493,294. The losses for the western area were distributed as follows:

Killed, officers	4, 401
Wounded, officers	9, 169
Missing, officers	1, 567
Total	15, 137
Killed, other ranks	63, 059
Wounded, other ranks	225, 716
Missing, other ranks	61, 134
Total	349, 909

Total casualties in all operations:

Killed, officers	6, 660
Wounded, officers	12, 633
Missing, officers	2, 000
Total	21, 293
Killed, other ranks	94, 992
Wounded, other ranks	304, 832
Missing, other ranks	72, 177
Total	472, 001

British casualties up to August 21, as given officially on September 14, were 381,983. This shows a total between that time and October 9 of 111,311, or a daily average of 2,271. Losses between June 9 and August 21 averaged about 1,500 daily.

After a study of the above table of losses it is not understood how anyone, whether civilian or soldier, can maintain that the rôle of the human element in war has been or can be decreased. Rather is it seen that the enormous losses suffered by troops in battle require ever-increasing numbers of men to be trained in peace and held in

reserve to take the place of the fallen, and that time will probably never again be available to train new troops in large numbers after war begins. It is said that the British Regular Army, as it existed at the beginning of the present war, practically disappeared during the first campaign in France; that is, in the retreat to the Marne and the subsequent advance to the Aisne. The British losses in officers and men were so enormous that there was practically no trained personnel left available for the instruction of the new levies, which undoubtedly accounts somewhat for the delay in sending the new units to France.

17. DEVELOPMENT OF ARMIES—PEACE TRAINING NECESSARY.

“The time required for raising extemporized armies depends largely on the presence or absence of trained instructors. If there be a corps of trained officers and noncommissioned officers and a tested organization of higher units with trained leaders and staff officers, the problem of training is limited to the training of the private soldier. * * * But where the leaders themselves are untrained, and where the officers and men must alike stumble toward efficiency without intelligent guidance, the formation of an efficient army is a question of years; indeed, such a force can not become an army at all within the period of duration of modern war. The American war of 1861–1865 presents the singular phenomenon of two extemporized armies gradually developing while in conflict with each other and is a most remarkable record of the evolution of such forces. In the conflicts of 1861 both officers and men were untrained for the duties demanded of them. Even the companies were imperfectly organized as units of the regiments, and the lack of cohesion was still more apparent in the higher units. * * * But even in the early stages of the war the influence of trained and able leaders was apparent. The time required to make an effective soldier depends very largely on the organization in which the recruit is enrolled. The recruit of 1861 could not become a good private until his captain became a good captain, but the recruit of 1863 was absorbed in a team already trained, and therefore became a trained soldier in a few months of active service. But, while the history of the Civil War is instructive as a record of military evolution, it can not be invoked as a guide of military policy, for we can count upon it that in our career as a world power no serious competitor will ever oppose us with extemporized armies. * * * It should be a fundamental principle of American policy that no officer should be intrusted with the leadership of American soldiers who has not prepared himself for that responsibility in time of peace. The American soldier, whether regular or volunteer, is entitled to trained leadership in war.”—*Organization of the Land Forces*, 1912.

18. CONCLUSIONS.

The present European war has demonstrated—

1. That the leading of an untrained or partially trained and ill-armed citizen soldiery against an army of trained veterans, with all the enginery of modern warfare, results in useless, senseless slaughter.

2. That in direct proportion as warfare becomes more scientific, complicated, and expensive does it require longer time to prepare for war, both in the matériel of war and in the training of the soldiers.

3. That the United States can not rely on having time to raise and equip new armies after the declaration of war, unless we have allies with well-trained armies to stand between us and disaster while we are preparing. Our traditional policy has been against entangling alliances.

4. That in making deductions from the operations and events of the present European war we should consider the events not alone in France and Flanders and the Dardanelles, which have developed into siege warfare, but the operations in other theaters which approximate more closely what would happen in the United States should they be attacked.

5. That it is necessary to have on hand at the beginning of war material for the equipment of all troops to be mobilized during the first three months of the war, and that this equipment should be accumulated by complete division units.

6. That modern armies, to be successful, must be well balanced—that is, composed of the proper proportions of infantry, cavalry, artillery, and special troops—and that if any arm or corps is lacking in time of peace successful military operations will be delayed until it is brought up to its due proportion.

7. That in the wars of the future matériel will play a very important part; but in the last analysis that side will be successful, other things being equal, which can longest supply reserves of adequately trained and disciplined officers and men.

**STUDY ON
PLACES OF ORIGIN AND ABILITY TO PROCURE
SUPPLIES NEEDED IN VAST QUANTITIES
IN TIME OF WAR**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

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STUDY ON PLACES OF ORIGIN AND ABILITY TO PROCURE SUPPLIES NEEDED IN VAST QUANTITIES IN TIME OF WAR.

1. The supplies needed for our armies in the event of mobilization include supplies which can be purchased in quantity at any time, and also those which can not be turned out except after weeks or months of delay. This delay would be due, first, to the fact that the article is not a standard article used in quantity by the civilian community; second, that the manufacture of some of the articles requires special dies and machinery not generally used by our manufacturers.

2. The principles which should be adopted therefore are—

(a) To standardize all articles of clothing and equipment as far as possible, using designs that are ordinarily used by the civilian or which can be turned out in quantity from hundreds of existing factories.

(b) To store up dies, machinery, and samples of special munitions, so that in the event of mobilization hundreds of factories could be given the special additional equipment which would enable them to begin at once the manufacture of these special munitions.

3. In order to obtain certain data from the chiefs of the five supply departments, each of them on September 14, 1915, was furnished a copy of the paragraphs below quoted, and also of paragraphs 50 and 52 to 62, inclusive, of the Statement of a Proper Military Policy for the United States, prepared by the War College Division of the General Staff Corps, in compliance with instructions of the Secretary of War, March, 1915, and submitted to him September 11, 1915. The paragraphs are as follows:

IV.

Has any study ever been made of the places of origin and ability to procure the various things which would be needed by us in vast quantities in time of war? If no such study has been made, ought it not to be made? In other words, does the Quartermaster General and the Chief of Ordnance, and the other heads of bureaus and departments, know in a general way what the need would be for an army of a million men, and where they could get all the things, and an assurance that in time of war they could get them? This should be considered, of course, in the light of the possibility that one or both oceans are closed to us; so that there should not only be a survey and accurate knowledge of what could be procured here and where it could be procured and how long it would take to procure it, but of what we would lack here and whether we could supply that lack and whence and how long it would take, etc.

Have we reports in hand of what matériel should be asked for, particularly ammunition, small arms, small-arm ammunition, field guns, Artillery, Field Artillery, Coast Artillery, etc.? If not, let the suggestions be made as soon as possible, so that they can be submitted and revised and some idea obtained of totals. The same thing should be done with respect to all other matériel which must be kept on hand. In this connection I think it would be extremely advisable for us to omit asking for anything as a reserve which we undoubtedly could get speedily if needed, and confine ourselves to making a reserve of those things which require periods of time.

50. For the purpose of storage, military supplies may be divided into four classes—

(a) Supplies that can be obtained in great quantities in the open market at any time.

(b) Those that can be obtained in sufficient quantities on 15 days' notice.

(c) Those that can be obtained on three months' notice.

(d) Those that can not be obtained within three months.

52. A fully trained force, to be effective during the critical period when war is imminent and during the first few weeks of a war, must not be hampered by lack of necessary supplies and equipment. For this reason supplies of all kinds which can not be obtained in the open market at any time must be kept on hand, in use and in store, at home and oversea, sufficient to equip without delay all troops whose training warrants sending them promptly into the field.

53. It is probable that as soon as war becomes imminent the partially trained citizen soldiery—500,000 mobile troops—will also be called out. As this partially trained force can not be expected to take the field within three months' time, it is practicable to refrain, after the third year, from keeping on hand or in store for it any articles of equipment except those necessary to complete its training and those which can not be procured within three months.

54. The total number of harbor-defense troops necessary is about 50,000. Due to conditions of service, it is believed that ultimately supplies of all kinds for 60,000 should be kept on hand.

55. In any great war volunteers must be called out in addition to the troops above enumerated.

56. It would be unwise to have on hand at the beginning of a war merely the supplies sufficient to place in the field our first contingent of troops and to complete the training of the partially trained citizen soldiery, and to be unprepared to supply to even a limited extent the volunteer army we should have to raise, not to mention replacements of arms, ammunition, clothing, and equipment of all kinds for those already in the field, but on account of the great sum of money which will be necessary in entering upon a program for collecting and storing military supplies it is believed that the subject of equipment for a volunteer army and replacements for the Regular Army and partially trained citizen soldiery should be provided for by obtaining options with domestic manufacturers to furnish the required supplies, all of domestic manufacture, in accordance with tentative contracts to be made by the supply departments with such manufacturers in time of peace. By so doing we will be taking the initial steps toward organizing the industrial and economic resources of the country as well as its resources in fighting men.

57. Referring to "reserves," approximately the following troops will be available at the close of the successive years:

	Fully trained mobile troops.	Partially trained continen- tal army.	Harbor- defense troops.	Total.
First year.....	160,000	185,000	30,000	375,000
Second year.....	219,000	351,000	40,000	610,000
Third year.....	320,000	500,000	50,000	870,000
Fourth year.....	383,000	500,000	52,000	935,000
Fifth year.....	439,000	500,000	54,000	993,000
Sixth year.....	489,000	500,000	56,000	1,045,000
Seventh year.....	534,000	500,000	58,000	1,092,000
Eighth year.....	574,000	500,000	60,000	1,134,000

A study of these figures and of the difficulties we have experienced in the past in the matter of supplies leads to the conclusion that the program adopted for procuring reserve supplies should be such that at the close of each year we should have in use and in store, at home and oversea, supplies of all kinds necessary to equip:

	Infantry divisions.	Cavalry divisions of nine regiments.	Harbor- defense troops.
First year.....	13	3	30,000
Second year.....	22	5	40,000
Third year.....	32	6	50,000
Fourth year.....	34	7	52,000
Fifth year.....	36	8	54,000
Sixth year.....	37	9	56,000
Seventh year.....	38	10	58,000
Eighth year.....	40	10	60,000

The supplies acquired during the first three years should include all articles which can not be obtained in sufficient quantities on fifteen days' notice, those acquired during the last five years to include only those articles which can not be obtained on three months' notice. After the eighth year the program should be extended to provide for the storing of such additional machine guns, rifles, field guns, ammunition, etc., as may be considered advisable.

58. In order that vast supplies pertaining to one supply bureau should not be secured and relatively nothing be done by other supply bureaus, supplies should be obtained progressively in complete division units.

59. In order that the efforts of the various supply bureaus may be properly coordinated by the Chief of Staff, reserve supplies should be collected in *general* supply depots located in accordance with the general principle below enumerated. Each general supply depot should be considered a place of issue in time of peace for all articles of field equipment, so that the stock on hand will be continually turned over and the machinery for the issuing and forwarding of supplies will be in operation at the outbreak of war. The commander of each general supply depot should be either a line or a staff officer specially selected by and reporting direct to the Chief of Staff or to the department commander and independent of the control of any one particular staff department, but keeping in touch with all. The commander of each general supply depot should be assisted by the necessary commissioned, enlisted, and civilian per-

sonnel. Supplies for not more than three division units should be stored at any one locality. Each place selected for a reserve storehouse should be one that will be at all times under adequate military protection, where ground is available and where abundant railroad facilities exist.

60. As a general military principle, no supply depot, arsenal, nor manufacturing plant of any considerable size, supported by War Department appropriations for military purposes should be established or maintained east of the Appalachian Mountains, west of Cascade or Sierra Nevada Mountains, nor within two hundred miles of our Canadian or Mexican borders, and steps should be taken gradually to cause to be moved, depots and manufacturing plants already established in violation of this military principle.

61. The estimated cost of the field equipment of one Infantry division, Tables of Organization, 1914, is as follows:

Kind of supplies.	Can be obtained in the open market in great quantities at any time.	Can be obtained on 15 days' notice.	Can be obtained on three months' notice.	Can not be obtained on three months' notice.
Signal supplies.....	\$722.12	\$1,688.51	\$6,030.46	\$285,310.26
Quartermaster supplies.....	51,983.35	54,054.45	3,177,083.47	.....
Engineer supplies.....	1,835.26	471.59	7,703.97	8,428.95
Ordnance supplies.....	5,779.67	7,730.96	257,489.89	4,164,770.68
Medical supplies.....	10,997.95	10,189.63	88,861.51	.....

And the estimated cost of one cavalry division of nine regiments is approximately as follows:

Kind of supplies.	Can be obtained in the open market in great quantities at any time.	Can be obtained on 15 days' notice.	Can be obtained on three months' notice.	Can not be obtained on three months' notice.
Signal supplies.....	\$370.80	\$1,638.53	\$4,290.61	\$277,156.43
Quartermaster supplies.....	55,102.48	76,143.40	4,584,628.93	.....
Engineer supplies.....	1,769.59	416.53	10,885.20	3,999.45
Ordnance supplies.....	31,862.02	8,630.56	311,056.68	3,541,004.68
Medical supplies.....	13,454.99	13,060.57	108,630.36	.....

62. While the amount of money involved is large, practically all of it will remain at home, especially if every effort be made by the supply bureaus to eliminate from supply tables all articles not of domestic manufacture. It must also be kept in mind that it is cheaper to buy war supplies in time of peace than in time of war.

4. The salient points mentioned in the reports received are as follows:

Chief of Engineers.—No adequate study made, but one should be made; work of the several bureaus ought to be supervised and coordinated so that they may be working to the same end and avoid getting confused and overlapping letters from the manufacturers and commercial firms who would supply articles to more than one bureau.

Chief Signal Officer.—Steps have been taken to procure estimates as to the quantity of material the principal manufacturers of the country can furnish and the probable length of time necessary for deliveries.

Chief of Ordnance.—A study has been made of the probable output of ordnance matériel of establishments in this country; the degree of preparedness of these plants in any future year can not be predicted; practically none of the ordnance matériel can be procured in less than three months, and a much longer time will be required for the procurement in quantity of any of the articles, even in case of plants that are thoroughly equipped at the time the orders are placed.

Surgeon General.—It is known where the necessary supplies can be purchased under usual conditions; a very large number of medicinal products are imported and could not be procured within our borders, but none are absolutely indispensable except quinine, opium, and cocaine; a large proportion of surgical instruments are imported; a fair amount of soft-metal goods can be obtained, but a pinch would be manifested in the lines of hand-forged steel instruments, such as knives, hemostatic forceps, and scissors.

Quartermaster General.—A study has been made of the places of origin and ability to procure supplies needed for an army of a million men; all the necessary articles are of domestic manufacture and can be readily obtained on reasonable notice.

5. The War College Division can find nothing in the reports received which indicates the advisability of changing its recommendations contained in paragraphs 46 to 62, inclusive, of the Statement of a Proper Military Policy for the United States, submitted September 11, 1915. The War College Division is of the opinion, however, that before anything can be accomplished looking toward co-ordinated action in the matter of storing reserve matériel a committee of the General Staff Corps must be charged, under the authority contained in section 2 of the act of Congress approved February 14, 1903, with the duty of supervising and coordinating the entire work of preparing each year the estimates for all amounts which the War Department recommends that Congress appropriate.

THE PROPER RELATIONSHIP BETWEEN THE ARMY AND THE PRESS IN WAR

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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THE PROPER RELATIONSHIP BETWEEN THE ARMY AND THE PRESS IN WAR.

1. INFLUENCE OF THE PRESS ON THE CONDUCT OF THE WAR.

When other means have failed and the country has decided on war the Army and Navy are the only agencies of the Government by which it can obtain its desired ends. They become paramount, and every utility and influence within the country should be brought to their aid.

The press, powerful in peace, may become more so in war. By its editorials and presentation of news it may sway the people for or against the war and thus stimulate recruiting and hearten and encourage the fighting forces in their work or, by adverse criticism, may tend to destroy the efficiency of these agencies.

Again by publishing news of the movements and numbers of our own troops valuable information can be conveyed to the enemy.

2. INSTANCES OF MILITARY SUCCESSES RESULTING FROM INFORMATION GLEANED FROM THE PRESS DURING PAST WARS.

During the Crimean War the Russians gained very reliable information regarding the works in the trenches of the allied armies and the progress of the siege of Sebastopol from the English newspapers.

In the American Civil War the northern generals obtained exact and valuable information through the Confederate papers. After the fall of Atlanta, Jefferson Davis, speaking at Macon and Palmetto, stated that measures had been taken in Tennessee and Kentucky to cut off Sherman's supplies from the North, and that having an army in his front and rear, in a hostile land, he must be annihilated. These speeches, published in the southern and reproduced in the northern press, soon reached Sherman. Acting on this information, and in order to keep his communication free, the Federal general began his famous march through Georgia to the sea. The reports of his successful progress, which appeared in the southern press, enabled Grant to send supplies to meet him at the coast.

In July, 1870, Maj. Krause, of the German staff, was able by means of French newspapers to ascertain the composition and strategical disposition of all the French corps.

When McMahon in 1870 attempted his disastrous march to the relief of Bazaine in Metz, to the success of which secrecy was essential, his movements became known to Prussian headquarters through English and French newspapers.

An instance, though of less importance, may be quoted from the other side, when, on the 8th of December, 1870, Gen. Faidherbe assumed the offensive with 30,000 men of the Army of the North, he made his diversion by way of St. Quentin, having learned from the Prussian newspapers that the first German army was in Normandy.

During the Spanish War the success of the Cuban expedition of May, 1898, was seriously menaced by the news in the American press concerning the concentration at Tampa. Every military movement was reported in the American newspapers, and the Spanish Government had, within two or three hours, complete accounts of the American preparation for war.

As an example of the importance of excluding from the press all mention of military movements, the following may be related:

When it became evident to our Military Information Division in 1897 that war was certain to occur between the United States and Spain an attempt was made to discover not only the numbers but the garrisons of the Spanish Army in Cuba. This was an extremely difficult task, because there was little, if any, direct information upon the subject, the Spanish Government having, so far as known, discontinued the practice of announcing in orders the departure of troops for the island. But the division was a subscriber for the chief Spanish newspapers, both before the war and during its progress. In these newspapers mention would be made now and then of an action at such and such a place in Cuba, the name of the regiment and battalion being given. By carefully compiling such mentions during a space of time extending over many months the Military Information Division was enabled to arrive at a really accurate estimate of the strength of the Spanish forces in Cuba, with their supplies of ammunition and other resources, and, moreover, enabled to state the composition of the various garrisons scattered throughout the island. This information naturally was of the very greatest value to our Government. It would have been of still greater value had land operations in Cuba lasted. Now, most of this information was gathered, as already said, from the newspapers, but not from formal statements of the departure of troops, giving their number, destination, and regiment or other unit, but from the most casual and, as it were, accidental mention of regiments and actions in the island by the Madrid papers from time to time. These mentions were so broken in character that it perhaps never occurred to the Spanish that they could be made the solid foundation of accurate information as to the strength of Spanish garrisons in the island, but slight and

insignificant as these data were, taken item by item, they, nevertheless, were made to yield a most important result; a thing that would have been impossible had the Spanish press been totally silent on the subject of the troops serving in Cuba. Subsequent events showed that these estimates were almost exactly correct.

3. CONTROL OF PRESS BY JAPAN IN RUSSO-JAPANESE WAR.

Japan was the first nation to completely take control of the press. In the early days of her war with Russia editors of Japanese newspapers were expressly prohibited from publishing the details regarding the organization, mobilization, or transportation of their country's naval and military forces. A warning was addressed to them emphasizing the power of the press to mar plans of operations, instances being cited from the Chinese-Japanese War of 1894-95; and an appeal was made to their patriotism to suppress any information which, however interesting to the public, might be of use to the enemy or give him the least indication of Japanese intentions or movements. How loyally the Japanese press had responded to this appeal is proved by the impenetrable mystery which shrouded the movements of Admiral Togo's ships and the marches of Marshal Oyama's armies.

The treatment of foreign newspaper correspondents by the Japanese is well expressed in a cartoon of London Punch, which pictured a Japanese officer blindfolding a correspondent, and as remarking, "Abjectly we desire to distinguish honorable newspaper man by honorable badge." The blindfolding of the foreign correspondents caused much ill feeling against Japan, and was expressed in many articles published after these correspondents returned to their countries, but Japan gained her purpose.

4. CONTROL OF PRESS BY BULGARIA.

In the first Balkan war Bulgaria's mobilization and concentration was kept secret even from her own people. Correspondents after the concentration were received, though they were not permitted to see or report anything of value. Correspondents were, however, free to leave as they pleased, and after they crossed the boundary could publish what they pleased. Many false reports of movements, etc., were sent from neutral cities by correspondents who had never been at the front.

5. CONTROL OF PRESS BY GREAT BRITAIN IN PRESENT WAR.

In the present European conflict all nations engaged have instituted a rigorous censorship. Great Britain's experience must be of greater interest to us, as conditions there are more nearly similar to our own.

Great Britain appears at first to have had two distinct organizations dealing with censorship: First, the press bureau, from which is given out such news as the Government desires to publish, and to which articles and dispatches to London newspapers are submitted for confirmation, permission to publish without confirmation, or suppression; second, the cable censors who pass on all cables filed, whether private, business, or journalistic. There is in addition a censorship on mail to hostile countries.

In addition to the main press bureau, there has been established in the foreign office a publicity bureau for the purpose of issuing information favorable to the allies.

There also exists in the admiralty a censorship of wireless.

This censorship has its authority in the general act giving to the naval and military officials the legal right to take such steps as might be necessary for the defense of the realm.

For the period preceding the declaration of war, and for several days thereafter (until Aug. 11), there was no official or organized press bureau. However, the proprietors and editors of the great newspapers, irrespective of class or party, all combined to take no notice of questions which the Admiralty or war office did not want referred to. Later the cable censorship became incorporated in the press bureau, and all press telegrams were censored at the Government central telegraph office. Cablegrams from abroad were sent by pneumatic tube to the central office, and after a censor's action sent to the addressee. Telegrams and cablegrams filed at any office were sent to the central office and after a censor's action placed on the Government lines or delivered to the company operating the cable. All press representatives were registered and any bulletin given out by the press bureau was simultaneously dictated to all. None could use it till all had received it. Before this change, made about September 1, 1914, much criticism had been expressed of the methods employed, particularly that some censors permitted dispatches to pass which other censors prohibited. No correspondents were allowed at the front. Daily communiques or bulletins were issued from army headquarters, and these have been supplemented by weekly descriptions given out as written by an "eyewitness."

It is understood that when the Dardanelles' expedition was planned that the active heads of the great papers were called to the war office and informed that but one correspondent would be permitted with the expedition. The newspapers were to decide on this man, and he would be in honor bound to send nothing but what was passed by the censor. * Mr. Ashmead Bartlett was chosen for this purpose.

The censorship has caused much criticism and discontent in England. The Government has been interpellated in Parliament, and

the press, particularly the Northcliffe papers, publish violent editorial comment.

At first there was much confusion, due to the inexperience of the censors and to the lack of system; this seems now to be partly remedied.

It was claimed, not without reason, that recruiting was impeded; later, when more accurate statements of the losses in Flanders were permitted to be published, recruiting was greatly stimulated.

6. CONTROL OF PRESS BY FRANCE IN PRESENT WAR.

In France, at the outbreak of the war, the Government took advantage of the parliamentary act of 1850, which specifies that the military government shall have the right to suppress newspapers for disobedience of instructions given concerning the publication of military information. At the call of mobilization, shortly before war was declared, the ministry in power commenced the organization of a bureau of press censorship.

In a session of August 5, the *Chambre de Deputes* passed a special act describing the military censorship to be established for the duration of the present war, but generally limiting the power of the censor to military and diplomatic information, political matters being excluded.

France, as in other nations, first permitted no correspondents at the front; later, certain well-vouched-for newspaper men have been taken on personally conducted tours. The army issues daily communiques, supplemented by periodical "eyewitness" stories, which are carefully worded and which, of course, contain nothing of value to the enemy.

7. CONTROL OF PRESS BY GERMANY IN PRESENT WAR.

Germany, as in all matters of preparation, was forehanded in her laws, and it was only necessary to issue the necessary decrees or orders prohibiting the publication of military information. While guarding the publication of useful military information, she has used the press to her advantage by permitting carefully conducted tours to the front of accredited newspaper men, especially neutral correspondents, and permitting them to publish interesting "human interest" stories, all showing Germany in a favorable light, but containing nothing of value to the enemy.

8. INFLUENCE OF PRESS ON SUCCESS OF THE ARMY.

The above has been written with a view of showing the influence that the press can have on the success of armies and the steps that

have been taken by foreign nations to prevent the publication of information valuable to the enemy.

There are two ways in which the press has a direct influence on the success of the army:

First. It may, by publishing names of organizations, numbers, movements, accounts of victories or defeats, furnish information to the enemy that will enable him to deduct the strength and location and intended movements of our own troops.

Second. By criticism of the conduct of campaigns, the action of certain officers or exploiting others, the people will be led to lose confidence in the army with the result that the moral support of the people is lost; they cry for and obtain new generals, and new plans of campaign, not based on expert knowledge and thought, with a consequent lengthening of the war or even defeat.

On the other hand, the desire of the people to know how the war is progressing and how fare their men, is one that should be fulfilled.

The press is their means of this information and their mouthpiece.

The right correlation of these opposing interests will furnish the solution of the proper relationship between the Army and the press in war.

In our country, with its numerous newspapers expressing the ideas and wishes of different political parties, the numerous telegraph, cable lines, and wireless stations furnishing means of communication within and without the country, the difficulty of proper control is great, and shows that unless the question is taken up now and studied with great care, and unless proper regulations are made at the outbreak of war, we will be in a worse position than England.

9. WILLINGNESS OF THE PRESS TO COOPERATE WITH THE GOVERNMENT.

It is known from the statements of prominent newspaper men that the responsible press associations and newspapers will meet the Government half way in this matter.

In 1913 Mr. J. C. O'Loughlin delivered a lecture before the Army War College in which he advocated publicity for the Army in peace, but in time of war "a censorship so strict, so thorough, that the operations of the armies, including the units composing them, would not even be referred to in the press." In that "twilight zone" between the above two conditions, when preparations for hostilities accompany diplomatic negotiations to avoid war, he would have the War Department appeal "to press associations and newspapers, conservative and yellow, to print no information respecting mobilization, movements, and anything which might affect injuriously our operations." He read letters from Mr. Melville E. Stone, general manager of the Associated Press; Mr. James Keeley, general man-

ager of the Chicago Tribune; and Mr. Frederic Palmer, all indorsing censorship and expressing belief that the selection of the right kind of war correspondents would make censorship possible.

One of our naval observers, in a report on press censorship in Great Britain during the present war, quotes two American journalists, as follows:

The trouble with the censorship is easily discerned; all the difficulties that have been encountered are readily chargeable to one thing—lack of preparation. * * *

In the United States the censorship would be as new and strange as it is in England; therefore every preparation should be made to take up the work in time of war. The Government in Washington should send officers to study all the telegraph and cable systems and locate all wires crossing the borders, and wireless stations, and so forth. More important still, a study should be made of the requirements of the newspapers, whose support and cooperation the Government must have, and whose needs, after all, are only the needs of the people. If officers detailed to investigate this problem were to go to newspaper editors and managers they would be given a hearty welcome and full cooperation, particularly at this moment, when censorship matters are uppermost in the minds of newspaper people. If an understanding is reached with the press in advance, the Government will find it easier in time of war to control the press and to guide it. Officers should also go to the great press associations of the country and study their system of disseminating news. The headquarters of these press associations would be where the censors would have to be stationed in order to control publication in American newspapers.

10. FIELD SERVICE REGULATIONS.

In our Field Service Regulations of 1914 there are regulations providing a censorship and governing correspondents with field armies. Therein is provided a chief censor at Washington, but his duties are not stated. These rules seem to be full and ample, but they apply only to censorship with the active armies in the field. They have had a limited trial in the recent occupation of Vera Cruz.

11. STUDY OF QUESTION BY GENERAL STAFF IN 1908.

In 1908 the General Staff made an exhaustive study of this question. Therein the constitutional aspect of restriction of publication was carefully considered.

12. RECOMMENDATIONS OF WAR COLLEGE DIVISION, GENERAL STAFF.

In February, 1915, the War College Division, by direction of the Chief of Staff, submitted a memorandum on the control of the press in war. After a full discussion of the question, the following recommendations were made:

(a) That an officer of the Army, designated by the Secretary of War, and an officer of the Navy, designated by the Secretary of the Navy, be directed to consult with representatives of the press associations and managers of leading newspapers of the country in drafting legislation authorizing the President to issue regulations for control of publication and censorship of telegraph, cable, wireless, and mail communication wherever such course may seem to him necessary for the defense of the country.

(b) That such draft, after approval by the Judge Advocate General of the Army, either be submitted to Congress at once or held ready to submit when conditions seem to warrant favorable action, as the President may deem proper.

(c) That whether or not such draft be now submitted, regulations to render an effective censorship be drawn up and careful plans be prepared for execution of the censorship under such regulations. These should include record of each cable, telegraph, and wireless station which would require supervision by a censor; list of all newspapers, periodicals, and correspondents; selection of Army and Navy officers, preferably retired, and of experienced newspaper men as personnel of the censorate. Following the British plan, the Assistant Secretary of War could well be assigned as director of the censorate.

(d) In time of national peril and absence of legislation, the President should at once direct a censorship of all communication by mail, cable, wire, or wireless; if necessary, declaring martial law to an extent necessary to effect arbitrary suppression of publication or communication of matter that might prove detrimental to national defense or useful to a possible enemy.

It is of vital importance that all these steps be taken before the occasion arises for application of a censorship. We may anticipate greater confusion and dissatisfaction than Great Britain experienced if no plans be prepared and no personnel be selected for execution thereof until the time arrives when censorship and control of the press become as necessary as in Europe in 1914.

The following tentative draft suggests the character of legislation recommended:

A BILL To confer upon the President power to restrict the publication of certain information inconsistent with the defense of the country.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That whenever in his judgment the defense of the country requires such action, the President may issue a proclamation prohibiting the publication of all news referring to the armed forces of the Government or the means and measures that may be contemplated for defense of the country, except when such publication shall have been duly authorized, and he may issue such regulations as may be necessary to render such prohibition effective.

SEC. 2. That after the President shall have issued such proclamation as is authorized by section 1 of this act it shall be unlawful for any person within the jurisdiction of the United States to publish or cause or procure to be published, or to assist in the publication of any information, facts, rumors, or news prohibited by the terms of the proclamation or regulations issued under this act, except when such publication shall have been duly authorized under such regulations, and any person who so offends may be punished by a fine of not more than \$10,000, or by a term of imprisonment of not more than three years, or both.

SEC. 3. That when in the judgment of the President the defense of the country no longer requires prohibition of publication he shall issue a proclamation revoking any proclamation issued under section 1 of this act; thereupon the pains and penalties authorized by this act, except for violations of regulations committed prior to such revocation, shall cease.

NOTE.—In this draft details of means for effective enforcement are purposely omitted, as they should be the subject of regulations authorized and could thus be changed whenever conditions warrant change.

13. REFERENCES ON FILE IN WAR COLLEGE DIVISION.

There are on file in the War College Division voluminous reports on censorship from our military attachés and observers with the countries now at war. These should be studied by any board that may be appointed to draw up regulations on the subject for our own service.

THE RECRUITMENT OF OFFICERS IN TIME OF PEACE IN THE PRINCIPAL ARMIES OF EUROPE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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RECRUITMENT OF OFFICERS IN TIME OF PEACE.

I. ACTIVE ARMY.

1. GERMANY.

In the active army.—In time of peace officers are obtained principally from two sources:

1. From the corps of cadets.

2. From young men of education and culture who enter the army as *Fahnenjunktors* (ensigns).

Appointment as a commissioned officer must be preceded by appointment as *Fahnrich* (ensign). Appointment as *Fahnrich* is conditional upon:

(a) The age limits within which persons may be appointed ensigns are 17½ and 23.

(b) Educational qualifications: Diploma from a *Gymnasium*, *Real Gymnasium*, *Ober Realschule*, corps of cadets, or passing the *Fahnrich* examination.

(c) Certificate of conduct, adaptability, and proficiency after at least six months' service with troops.

Appointment as commissioned officer is conditional upon:

(a) Attendance at a "war school" (in exceptional cases this may be dispensed with; for instance, where a candidate has studied several terms at a higher educational institution).

(b) Passing the "officers' examination" at a "war school" or as a member of the *Selekta* (a *selektaner*; see military schools of Germany).

(c) A favorable indorsement or certificate from the troop unit to which attached.

(d) Election by officers of the regiment.

The election of new officers by the corps of officers was introduced in the Prussian Army in 1808. Through it the aristocratic character of the German Army is maintained. For conspicuous bravery or conduct on the field of battle recommendations for a commission may be made. But here, also, such a recommendation must be preceded by a vote of the officers of the regiment.

Officers on the active list who on account of age or disability are required to leave the service are entitled to a pension, depending in amount on rank, length of service, character of disability. Offi-

cers on the reserve and *Landwehr*, upon reaching the required statutory age, pass to the *Landwehr* or *Landsturm*, respectively, if they do not desire to continue in the reserve of the *Landwehr*. Should they become disabled in the line of duty they are entitled to the same pensions as officers of the active army.

The *officer aspirant* must be at least 23 years of age, must be unmarried, a German by birth, and be physically qualified for service. Each candidate should have a diploma from a certain type of institution, and should have served a period of one year in the Army. In place of the examination which is given to the cadet when he leaves a cadet school, the *officer aspirant* must qualify in the following:

German language and literature; in three other languages chosen from the following: Latin, Greek, French, English, or Russian; history, geography, and mathematics are obligatory. In case he is a graduate of one of the higher Royal schools one of the languages is replaced by physics and chemistry. There are certain other requirements which are elective, such as map reading and topographical sketching.

Having passed these tests he is then required to enter the army for six months' service as a temporary officer, at the end of which time he is sent to one of the "war schools," and upon graduation from this last institution may become an officer. The cadet schools, however, furnish about one-third of all the officers in the German service.

2. FRANCE.

Officers are recruited from three principal sources: the great military schools, schools for noncommissioned officers, and from selected warrant officers of at least 10 years' service as noncommissioned officers. The proportion from the last class is about one-fifth of the promotions to the grade of sublieutenant.

Commissions in the French Army are obtained by passing through one of the military schools, either with or without previous service in the ranks.

Young men who desire a commission without going through the ranks must, in the first instance, pass through the *Ecole Speciale* at St. Cyr, for the infantry and cavalry, or the *Ecole Polytechnique* for the artillery and engineers.

After passing successfully out of St. Cyr the young infantry officers pass direct to their regiments.

Cavalry candidates have to complete a course of instruction at the *Ecole d'Application*, at Saumur, and artillery and engineer candidates, after passing out of the *Ecole Polytechnique*, a course at the similar establishment at Fontainebleau.

Admission to the *Ecole Speciale*, at St. Cyr, is by competitive examination, the age limits being between 18 and 21. The students form a battalion of 6 companies. The course lasts 2 years, and the number of competitors is always large.

The *Ecole Polytechnique*, in addition to the training of artillery and engineer candidates, supplies young men for the naval and state engineering departments, telegraphs, state factories, etc. Admission is by competitive examination, and the age limit as for St. Cyr (with certain exceptions in favor of soldiers). The course lasts two years. The *Ecole d'Application*, at Saumur, completes the education of young cavalry officers from St. Cyr, and the *Ecole d'Application*, at Fontainebleau, that of the young officers of artillery and engineers going from the Polytechnique. The course at the former establishment last 11 months, at the latter two years.

The *Ecole Militaire*, at St. Maixent, completes the military instruction of "sous-officers" of the infantry and cavalry, who, in peace time, only receive commissions after passing the course with credit. Candidates must have at least two years' service in the rank of "sous-officer" before being allowed to compete, and they have also to pass a preliminary examination at their regimental schools. Admission to the school is by competition, and the course lasts one year. Those who pass through it successfully are appointed sublieutenants.

The *Ecole Militaire* at Versailles for noncommissioned officers of artillery and engineers is organized on similar lines.

3. AUSTRIA-HUNGARY.

Officers for the Imperial Austro-Hungarian Army are recruited from two distinct sources—from the military schools and from the cadet corps. The schools or military academies—for so they might be called—are two in number, one at Neustadt, outside of Vienna, and the other in Vienna itself. The first provides officers for the infantry, cavalry, and pioneers, and the technical academy at Vienna for artillery and other engineer officers. The candidates for admission to these institutions must be between the ages of 18 and 21, and, after having undergone the course of instruction, are named by the Emperor to the position of lieutenant and assigned by the Minister of War in accordance with the needs of the service, although a choice is given them of the arm in which they desire to serve. The cadet schools are not exactly analogous to any of the schools heretofore mentioned, but are rather elementary in their nature. They take, as a rule, young men from 14 to 18 years of age. These young men do not necessarily belong to the army, but a part of the vacancies are saved for a certain number of young men who are already serving voluntarily in the army who complete a period of from six months to one

year. The duration of a course at this school is four years, but the two first are devoted solely to perfecting the student in the line of a general education, and the last two solely to studies which are professional and military.

The cadet schools are 18 in number. There are 15 infantry schools, one cavalry school, one artillery school, and one for pioneers. Those graduates who have completed satisfactorily the course are assigned throughout the service where vacancies exist. Those who have formerly served are, upon their reentrance into service, assigned to the corps in which they originally served. They take rank among all other cadets throughout the army, seniority being determined by the rank upon leaving the school. All cadets, of whatever school, are placed upon a single list according to the arm and are drawn in accordance with the vacancies by seniority. During the time in which they are serving as a cadet officer they are exercising the functions of an officer but without rank. It is during this period that they are passed upon by their regimental commanders and by the officers of the regiment, recommendation from whom is necessary before the cadet receives his final commission. Generally speaking, about five-sixths of the infantry and cavalry, and about four-sixths of the special arms, come from the cadet schools.

4. ITALY.

The law governing the recruitment of officers in the Italian Army has been in force since 1832, and few, if any, changes have been made. With no exceptions all officers must pass through the royal academy at Turin and the royal military school at Modena. The law requires that no one shall be promoted a sublieutenant who has not reached the age of 18 years unless he has served two years as a noncommissioned officer in the active army and has established to the satisfaction of all concerned his qualifications for this position. One-third of all vacancies in the grade of sublieutenant are reserved for noncommissioned officers; the two other thirds are left to the graduates of the military establishments. The royal military academy at Turin furnishes all the officers for the artillery and engineers, while the royal military academy at Modena furnishes those for the infantry and cavalry. In addition, there are a number of schools of application, mainly for artillery and cavalry. These cadet schools are open to all native-born Italians between the ages of 15 and 20, but the age limit can be extended to 23 in case the applicant has served with the colors. The duration of the course in the two first-mentioned establishments is three years; sublieutenants of the special arms, on leaving the academy, must pass two more years in a second school, namely, the school of application, also at Turin, and upon

graduation from this institution they are named lieutenants. The sublieutenants of cavalry are sent to the cavalry school at Modena for one year more to finish their professional instruction. The sublieutenants of infantry alone are sent directly to their corps without any further instruction.

The noncommissioned officers who are named have no opportunity of undergoing such a course as is laid down for the sublieutenants of the special arms, but pass directly into the grade of sublieutenant, after examination, as do the sublieutenants of infantry on leaving the military academy. It has been found that all of these various categories reach their lieutenantcies in practically the same time, but the noncommissioned officer, owing to his age, as well as for other reasons, seldom passes the grade of captain, although a few attain the grade of major.

5. RUSSIA.

Owing to the fact that the military profession is the most important one in all Russia, the number of applicants for entrance into the corps of officers is very large, and considerable care must be taken in the selection of the material which applies for commissions. Before the war the corps of officers was recruited from the following sources:

1. The corps of pages of the Emperor.
2. The military schools.
3. From military academies for those young men of superior education who desired to perfect themselves after service of one year with the colors.
4. From noncommissioned officers appointed directly from the ranks.

Preparatory schools.—School of Pages at Petrograd. Sons of high dignitaries of the court. Nine years of instruction, of which seven are devoted to general education and the last two to military instruction.

Cadet schools.—Sons of officers and dignitaries of court, from 10 to 18 years of age. Since 1909, by paying certain fees at designated schools, the sons of merchants and of other civilians may attend.

Seven years of instruction. The organization is military, but instruction is under civil professors.

There are four of these schools at Petrograd, three at Moscow, one at Orel, at Voronege, at Novi Novgorod, at Polotsk, at Pskov, at Poltava, at Soumy, at Kiev, at Jaroslow, at Warsaw, at Symbirsk, at Odessa, at Omsk, at Tiflis, at Novotchevkask, at Khaborovsk, two at Orenburg, one at Taskhevt, at Vladikavkas, at Valsk, and at Irkontsk—29 in all.

Military schools.—Pages of the Emperor.

The upper class at the School of Pages is admitted by examination, and the course covers two years of military studies. A classification is made at end of course into four categories:

1. Graduates who are nominated sublieutenants in the guard (with rank of lieutenant).
2. By nomination to line of the army with commission antedated by one year.
3. Nominated sublieutenants at date of graduation.
4. Assigned as noncommissioned officers in a corps for six months' service.

Military academies.—Entrance by examination. Minimum age, 16 years. Young men coming from secondary civil schools or from cadet schools, who must show a certificate of proficiency.

For infantry officers.—There are 12 schools, the course being two years.

For cavalry officers.—There are three schools, the course being two years.

For artillery officers.—There are two schools, the course being three years.

For Cossacks.—There are two schools.

For engineers.—There is one school at Petrograd, with a course of three years.

The graduates of infantry and cavalry can, upon leaving their special schools, continue for a third year in the artillery and engineer school, and thus enter these arms.

6. GREAT BRITAIN.

The commissions in the regular army are given to the following persons:

A commission as second lieutenant in the cavalry or infantry may be given—

To a cadet who has passed through a course of instruction at the Royal Military College, Sandhurst, or to a cadet of the Royal Military College, Kingston, Canada.

To an officer of the special reserve of officers, militia, or territorial force, to an officer of the local military forces of the colonies, or to a second lieutenant or a lieutenant of the Royal Malta Artillery.

To a candidate from a university.

To a warrant officer or noncommissioned officer.

In the case of an appointment as second lieutenant of a regiment of the Household Cavalry, the nomination for the approval of a qualified candidate shall be vested in the colonel in chief of the brigade.

In the case of an appointment as second lieutenant in the Foot Guards, the colonel of the regiment concerned shall nominate for approval a candidate qualified under this article.

A commission as second lieutenant in the Royal Artillery may be given—

To a cadet who has passed through a course of instruction at the Royal Military Academy, Woolwich, or to a cadet of the Royal Military College, Kingston, Canada.

To an artillery officer of the special reserve of officers, militia, or territorial force.

To an officer of the local military forces of the colonies.

To a candidate from a university.

To a warrant officer or noncommissioned officer.

A commission as second lieutenant in the Royal Engineers may be given—

To a cadet who has passed through a course of instruction at the Royal Military Academy, Woolwich, or to a cadet of the Royal Military College, Kingston, Canada.

To a warrant officer or noncommissioned officer.

A commission as second lieutenant in the army service corps may be given—

To a qualified officer of the regular army, of the royal marines, with not less than one year's commissioned service.

To a cadet who has passed through a course of instruction at the Royal Military College, Sandhurst, or to a cadet of the Royal Military College, Kingston, Canada.

To an officer of the special reserve of officers, militia, or territorial force.

To an officer of the local military forces of the colonies.

To a candidate from a university.

By open competition.

To a warrant officer or noncommissioned officer.

Before final appointment to the army reserve corps, all candidates shall be required to pass a probationary period of one year from the date of joining. When it is desirable in the interests of the service, the probationary period may be terminated earlier.

A commission as second lieutenant on the unattached list of candidates for appointment to the Indian Army may be given to a cadet who has passed through a course of instruction at the Royal Military College, Sandhurst, or to a cadet of the Royal Military College, Kingston, Canada, or to a duly qualified candidate from a university.

A commission as director of music in the army may be given to a bandmaster of specially meritorious service and not over 55 years of age.

A commission as lieutenant in the cavalry, the infantry, or the army service corps, may be given to a quartermaster or ridingmaster not over 32 years of age.

A commission as lieutenant on the list of district officers of the Royal Artillery, or in the coast battalion of the Royal Engineers, may be given to a quartermaster or a ridingmaster, or to a warrant officer or noncommissioned officer of the Royal Artillery or Royal Engineers, not over 40 years of age. The above limit of age may be extended in a case of promotion for service in the field.

A commission as quartermaster or ridingmaster may be given to an officer, a warrant officer, or a noncommissioned officer, not over 40 years of age.

The above limit of age may be extended in the following cases:

(a) If promoted for service in the field.

(b) If selected for an extra regimental appointment in the army, not being a departmental appointment, or if promoted before attaining the age of 40 to the rank of quartermaster-corporal-major, or quartermaster-sergeant, or to an appointment which carries with it the rank of warrant officer; in which case the limit of age may be extended to 45.

II. RECRUITMENT OF RESERVE OFFICERS.

7. GERMANY.

Officers of the reserve are recruited from—

1. Officers of the active army who have been furloughed after 18 years' service.

2. Officers who leave the service before the completion of that period.

(a) Officers who have not finished 18 years' service are assigned with their actual rank and in accordance with their age to the reserve and landwehr.

(b) Officers after 18 years' service are classed as being "at disposal," and if they are capable of being utilized are often employed with higher rank.

(c) Those officers whose age and health do not permit them to be placed "at disposal" are sent to depots for duty.

3. From former one-year volunteers who fulfill certain conditions.

Prerequisites to such an appointment from this last-named class are—

(a) Participation in two courses of practical exercises of eight weeks' duration each, as a rule, during the two years next following their discharge from service. The first of these periods the aspirant performs the duties of a noncommissioned officer and the second period as an officer.

(b) Election. In peace time by the corps of officers of the landwehr district. Officers who are "furloughed" may be required, if reserve officers, to attend on three separate occasions exercises lasting from four to eight weeks each. As a matter of principle they are attached, in event of mobilization, to the organization to whose reserve they belong. A reserve officer advances to a higher grade *pari passu* with the regimental officer of the line next below him.

Officers who are "furloughed" may be required as landwehr officers to attend exercises especially ordered for the landwehr, or if they wish, to duty with troops of the active army. They are assigned either to troops of the landwehr or line.

8. FRANCE.

Officers of the reserve consist of—

1. Officers of the active army who have retired under certain conditions.

2. Students of the polytechnic, forestry and other schools where a certain amount of military instruction is required. These men pass an examination and are then attached to regiments as reserve officers for one year.

3. Certain noncommissioned officers of the reserve.

As a general rule the above-mentioned categories retain their appointments (promotions being allowed to include the grade of captain) as long as the class to which they would belong remains in the reserve of the regular army. They then pass into the territorial army with same rank.

Subalterns of the reserve may be promoted to be captains after certain periods of service in the lower grades.

Captains of the reserve who have previously served as captains are eligible under conditions to a majority.

Sublieutenants in the reserve are eligible for promotion to lieutenantcies in the territorial army, and captains of reserve to majors in the territorial army.

Officers of both reserve and territorial armies, at their request, may be retained after expiration of legal term of service, but field officers may be retired at 65 and others at 60 years of age.

9. AUSTRIA-HUNGARY.

The reserve officers necessary to complete the units of the common army upon mobilization are provided by:

1. Using all officers who are furloughed from the service. Each officer who has finished three years in the active army is permitted to pass into the reserve and remain there until 60 years of age, provided he engages to serve in case of war.

2. By the promotion to the grade of lieutenant of former cadets or volunteers who engaged under obligation to become reserve officers after a year's service.

These officers are very numerous, and the needs of mobilization are amply provided for.

Officers of the landwehr or honved are supplied as follows:

1. By transfer to the landwehr (or honved according to nationality), upon request, of officers who have served 10 years in the army or reserve.

2. By nominating to the rank of second lieutenant young men, able to pass the recruiting requirements, who pass through special schools for instruction of officers of the landwehr or honved.

3. By promotions in the landwehr or honved to the several grades of officers, made in conformity with regulations governing promotion in the active army.

These last promotions are governed by conditions sufficiently rigorous, and it is impossible to reach the higher grades without having served in the active army as a subaltern.

In Hungary the conditions for entrance to the honved have been carefully and conscientiously watched, so that this force has attained practically the standard of a semipermanent force. The same can be said of the forces in Galicia, Croatia, and Bohemia.

10. ITALY.

The military system of this country differs considerably from those of other European countries, and for this reason there is a different system for the selection and assignment of the additional officers needed for the troops of the second and third lines.

Additional officers are obtained about as follows:

There are two courses of instruction:

(a) A six months' course for all young men holding certificates from the lyceums or similar institutions. This does not apply to the cavalry, train, or field artillery.

(b) A course of nine months for those young men having only a certificate of admission for a two-years' course at lyceums, or those having undergone a general examination for a commission.

These courses are taken by young men from 18 to 26 years of age who are not yet drawn for service either as corporals or privates of the active army; also by privates and corporals on unlimited furlough who ask for a return to the active army.

The courses are placed under the superior direction of corps commanders and the young men assigned to a special unit for the course. It is divided into two equal parts, and at the completion of each part the candidates must pass an examination. At the end of the first period they are appointed corporals, and at the end of the second period sergeants, provided their work has been satisfactory.

The candidates who are appointed sergeants are then required to perform four months with a unit, and at the end of this stage they must pass the required officer's examination.

They are then furloughed, but at the end of two months they are called as officers and assigned to still another unit to serve three months as officers.

Noncommissioned officers on unlimited furlough can be commissioned by passing an officer's examination.

The students at military colleges and schools who have successfully passed the second year's examination can be appointed additional officers only after a period of service of three months as officers. Other students, by passing an examination and showing proficiency, must serve four months as privates and four months as sergeants before qualifying sufficiently to serve their three months as officers.

11. RUSSIA.

The reserves of the active army are officered by (1) assigning officers who are "on furlough" or "retired" but still bound to render service in time of war; (2) volunteers who have passed a special examination at the end of their service, as well as selected noncommissioned officers passing the examination after a probationary period of six weeks. Both of these can be appointed ensigns in the reserve.

Officers of the reserve called in case of mobilization can be promoted to a higher grade, provided they have had at least four years in their grade since last promotion, have had at least four months' actual service upon rejoining their organizations, and have passed a satisfactory examination.

Once a year—in the summer—a special commission is assembled which is charged with the examination of candidates for the reserve officers.

The examinations are briefly as follows:

For the infantry:

1. Regulations and military law.
2. Field-service regulations.
3. Principles of infantry fire.
4. Field fortification.

For the cavalry:

- 1, 2, and 3 as for infantry.
4. Methods of hasty demolition.

For the artillery:

- 1 and 2 as for infantry, with necessary modifications.
3. A brief course on the different types of artillery.
4. As for infantry, with necessary modifications.

For the engineers: 1, 2, and 3 as for infantry, with necessary modifications for arm.

If successful the candidate is sent immediately to a reserve unit for active duty, the duration of which must be at least four months.

In case they are unsuccessful they may present themselves the following year and they may remain in the service during this period until time for examination.

The number of reserve officers is insufficient and there are a considerable number needed for mobilization purposes.

To remedy this deficiency a number of acting ensigns will have to be chosen from selected noncommissioned officers.

12. GREAT BRITAIN.

An officer who has retired from the regular forces on retired pay, or with a gratuity, shall be a member of the reserve of officers so long as he is liable to be recalled to army service under certain age limitations; until 50 if a lieutenant or captain; until 56 if a quartermaster, major, lieutenant colonel, or colonel; and until 67 if a general officer.

Provided that an officer who misconducts himself or who is certified by the regulated medical authority to be mentally or physically unfit may be removed from the reserve of officers.

A commission in the reserve of officers may be granted to—(a) the regular forces; (b) the special reserve of officers; (c) the auxiliary forces; or (d) the Indian military forces, with the exception of those who entered the Indian army subsequent to the 8th of January, 1892.

A gentleman who has served as an officer or cadet in the officers' training corps.

An officer who served in South Africa as an officer of the Imperial Yeomanry, City of London Imperial Volunteers, volunteer service companies, or colonial irregular corps may be granted a commission in the reserve of officers, subject to articles 688 and 690, and subject to the following conditions:

For the rank of captain he must have served in South Africa with the rank of captain for not less than 12 months.

For the rank of lieutenant he must have served in South Africa with the rank of captain or lieutenant for not less than six months.

An officer or a gentleman who has served as an officer or cadet in the officers' training corps, volunteering for service in the reserve of officers, shall, if his services are accepted, receive from the Government a commission as an officer in the land forces.

A commission shall not be granted to any officer or gentleman who has served as an officer or cadet in the officers' training corps who is not medically fit for service or whose character and qualifications are not satisfactory.

An officer who has retired from the auxiliary forces shall not be granted a commission in the reserve of officers unless he fulfills the following conditions:

For the rank of captain he must have had at least seven years' commissioned service at the time of his retirement, including three years as captain or field officer, and have qualified for the rank of field officer.

For the rank of lieutenant or second lieutenant he must have had at least two years' commissioned service at the time of his retirement and have qualified for the rank of captain.

An officer who has retired from the special reserve of officers may be granted a commission in the reserve of officers, subject to the following conditions:

He must have completed not less than 10 years' commissioned service in the special reserve of officers and have attained the age of 35.

An officer shall not be appointed to the reserve of officers in a rank higher than that which he held on retirement; nor shall he be granted a commission in that reserve if his age exceeds the following:

For appointment as a captain, 45.

For appointment as a lieutenant or second lieutenant, 40.

A gentleman who has served as an officer in the officers' training corps shall not be appointed to the reserve of officers in a higher rank than that of lieutenant, nor a gentleman who has served as a cadet in a higher rank than that of second lieutenant.

A commission in the reserve of officers shall not be granted to an officer who is serving in the special reserve of officers, the Channel Islands, or the Malta Militia, under the provisions of article 559.

The limitations of age and the qualifications prescribed by articles 683 to 690 may be dispensed with in cases where the army council consider it desirable in the interests of the service that the rules laid down in those articles should not be enforced.

An officer of the Royal Army Medical Corps with at least three, and not more than six years' service, may be permitted to join the reserve of officers for a period of seven years. While so situated he shall receive a retaining fee at the rate of £25 per year.

With the sanction of the army council he may be permitted to return to the active list, and if the period he has been in the reserve amounts to at least one year, and not more than three years, he shall be allowed to reckon one-third of such period toward promotion, gratuity, and pension.

Any army reserve officer shall report himself at the commencement of each year, in writing, to the army council. Should he fail to do so, he shall (unless he is an officer retired from the regular

forces, with liability for further service in case of emergency) be removed from the reserve at the end of the year in which he fails to report himself.

An officer appointed under article 682 or 683 shall be removed from the reserve, by notification in the London Gazette, at the age of 55, if a field officer; and at the age of 50, if a captain, lieutenant, or second lieutenant.

EMPLOYMENT ON ARMY SERVICE.

An army reserve officer shall be liable to be called to army service at home or abroad at a time of national emergency, or when a national emergency appears to be imminent.

An army reserve officer may, with his own consent and the sanction of the army council, be employed on army service at any time.

An army reserve officer shall, while employed on army service, and not over 65 years of age, be eligible for promotion.

An army reserve officer, not being a retired officer, and not coming under the conditions of article 496 (governing the rate of pay and allowances), shall be granted, from the date of joining for army service to the date on which his services are no longer required, and subject to article 501 (special pay allowances), the rates of pay and allowances granted to an officer on the active list of corresponding rank in the same branch of the reserve.

SPECIAL RESERVE OF OFFICERS, MILITIA, AND TERRITORIAL FORCE.

General qualifications.—To be eligible to attend a competitive examination, a candidate must fulfill the following conditions:

(a) He must be unmarried, and will not be accepted unless, in the opinion of the army council, he is in all respects suitable to hold a commission in the regular army.

(b) He must attain the age of 20 and not attain the age of 25 on the 1st of April for a March examination, or on the 1st of October for an examination in that month.

(c) He must have qualified at an army entrance examination or passed some other examination accepted in lieu thereof.

(d) He must serve for 18 months in the branch of the service to which he belongs.

NOTE.—Certificates A and B obtained in the officers' training corps entitle a candidate to reductions in the period of total service and attachment mentioned above.

An officer of the special reserve of officers must have completed his probationary training and been confirmed in his appointment.

An officer of the Irish Horse, Malta, Bermuda, or Channel Islands Militia, or territorial force must have completed a period of attach-

ment to a regular unit of the arm of the service to which he belongs and have been satisfactorily reported upon.

In the case of infantry the full period of attachment is 6 months, and in the case of other arms 12 months.

(e) He must be recommended by his commanding officer.

(f) If a candidate for the Royal Artillery, he must be an officer of the special reserve artillery, militia artillery, or territorial force artillery.

(g) If a candidate for Royal Field Artillery, he must also have an equitation certificate.

An officer of the artillery may, if eligible, compete as a candidate for the Royal Artillery, and also on the general list for other branches of the service.

COMPETITIVE EXAMINATION (WRITTEN).

Subjects.—Military history and strategy (2 papers), tactics (2 papers), field engineering (2 papers), map reading and field sketching (1 paper), military law (1 paper), military administration and organization (1 paper).

Qualifying minimum.—Four of the marks in each paper and five of the aggregate marks.

Practical test.—A candidate must also pass a practical test in map reading and field sketching.

UNIVERSITIES.

(Including Universities in the Overseas Dominions and Crown Colonies.)

General qualifications.—A certain number of commissions in the cavalry, Royal Artillery, infantry, army service corps, and Indian army are granted each half year on the nomination of such universities or groups of universities as have established courses of military instruction approved by the army council.

For a list of the universities empowered to nominate candidates see the regulations.

Nomination is made in January and July of each year.

A candidate must be: (a) Unmarried. (b) Suitable, in the opinion of the army council, to hold a commission. (c) Able to produce a certificate of good character from the head of the university or college.

Age.—A candidate must have attained the age of 21 and must not have attained the age of 25 on the 15th of January for the winter nomination or the 15th of July for the summer nomination.

(A candidate for appointment to the Indian army must be between the ages of 21 and 24 on the dates named.)

Antedate.—The commission of nominated candidates will be antedated 18 months from the date in which their names appear in the London Gazette.

A candidate who has graduated with first or second class honors may, on the recommendation of the nomination board, be granted such an additional antedate (not exceeding 6 months) as may be approved by the army council.

GENERAL OUTLINE OF TESTS WHICH MUST BE PASSED.

A candidate must—

1. Fulfill certain conditions as to residence or presence during a certain course of study at the university.
2. Undergo a course of military instruction at the university, qualify at an examination in military subjects.
3. Be a member of the university contingent of the officers' training corps.
4. Fulfill certain conditions as to attachment to a regular unit of the army.
5. Take a degree in an approved subject or group of subjects.
6. Pass a medical examination.

SUBJECTS OF WRITTEN EXAMINATION.

Group A:

1. Military History and Strategy (2 papers).
2. Tactics (2 papers).

Group B:

3. Field Engineering (2 papers).
4. Map Reading and Field Sketching (1 paper).

Group C:

5. Military Administration and Organization (1 paper).

Candidates who desire may take up the examination in three parts. For this purpose the subjects are divided into groups as shown.

III. MILITARY SCHOOLS.

13. GERMANY.

CORPS OF CADETS.

The organization of the cadet corps has been already outlined. Its members are largely the sons of army and navy officers and receive their subsistence, clothing, and tuition free, or at a nominal charge. After passing through one of the six "cadet houses," cadets enter the central cadet institute at Gross-Lichterfelde, in the vicinity of Berlin,

of which a colonel is the superintendent, where they are formed into companies and battalions for military drill and discipline.

The battalion organization has no connection with the classes, of which there are three, namely, the secunda, prima, and selecta. Each of the first named is again divided into a lower and upper section, known, respectively, as lower and upper secunda, lower and upper prima. Those of the cadets who complete their seventeenth year before April 1 of the current year, have an adequate bodily development, and who after passing through the upper secunda are deemed sufficiently prepared, are examined (in February or March) before the "superior military examining committee." With the exception of some of the most proficient and promising, who are entered in the selecta class, all who have passed the examination join regiments as titular sword-knot ensigns, thus being placed on substantially the same footing with the college (gymnasia or real school) graduates of the officer aspirants. The cadets who, having passed through the upper secunda, fail at the examination, as well as those who, though of sufficient age and physique are not admitted to it, are, as a rule, returned to their parents or entered in the army as privates, exceptionally so as noncommissioned officers, for the discharge of their liability to military service.

To the lower prima are transferred cadets of deficient age or physique who have passed successfully through the upper secunda, and also talented cadets of the same class standing who are not so deficient, but whose parents desire the transfer. In exceptional cases the latter class of cadets may also be appointed sword-knot noncommissioned officers and the former noncommissioned officers, all being at the same time members of lower prima. After successful passage through the lower prima, cadets are either admitted to the "ensign examination" or transferred to the upper prima, according to the expressed desire of their parents. If in the former case they pass the examination, as they almost invariably do, it depends upon circumstances whether they are sent to their regiments as titular or actual sword-knot ensigns. The course through upper prima, during which the members may hold the appointment of sword-knot noncommissioned officers, is terminated by what is termed the *Arbiturienten Examen*.¹ The cadets who pass the examination are transferred to the army as actual ensigns and simultaneously sent to the war school. If, after going through the latter, they pass the officer examination with credit, they are commissioned second lieutenants as of the date of their transfer to the army.

¹ This is also called the Maturitäts Examen, as the diploma issued to the person who has passed it declares that he is ripe or mature for the commencement of professional studies at the university.

The members of the selecta are at the close of the course subjected, if deemed proficient, to the officer examination; those who pass and who seem qualified by reason of their conduct and bearing while on and off duty, receive the appointment as second lieutenant. Such selecta cadets as have passed the examination, but whose deportment has not been altogether satisfactory, join regiments as ensigns, a period of not less than two months nor more than six months intervening before their advancement to the grade of second lieutenant. Those cadets who fail upon examination, or who by reason of deficient deportment or insufficient preparation are not admitted thereto, are appointed ensigns and join regiments, the former for reexamination at the end of three months. The latter may, without previous attendance of the war school, be reported by their commanding officer to the "superior military examining committee," as prepared for the "officer examination" when they have acquired the prescribed certificate of good conduct and good soldiery.

Upon passing the officer examination, and having been approved by the corps of officers, ensigns may be recommended for appointment as second lieutenants.

In Prussia the control of military training and education, disconnected from service with troops (excepting that of the war academy, which, being a staff college, is under the supervision of the chief of the general staff of the army), is lodged in a "general inspection of the system of military education and training," at the head of which stands a general of infantry as inspector general, to whom two officers (a lieutenant colonel and a major) are assigned as adjutants. Subordinated to the general inspection are—

1. *The "superior military committee of studies,"* consisting of 13 officers of high rank, to whom questions affecting the organization, course, and methods of studies of Prussian military schools (except the war academy) are referred for opinion.

2. *The "superior military examination committee,"* presided over by a major general, whose duties will be explained further on.

3. *The inspection of war schools,* headed by a colonel. These schools prepare sword-knot ensigns (Portépéefährliche) of all arms for the so-called officer examination. They are located at the following places: Potsdam, Glogau, Neisse, Engers, Cassel, Hannover, Auklam, Metz, and Hersfeld. There is a similar institution at Munich, Bavaria.

The course lasts from 9 to 10 months and embraces tactics, manufacture of ordnance and ordnance stores, science of arms, field and permanent fortifications, attack and defense of strong places, military topography, and army administration. Artillery ranges and technical institutes and fortresses are visited by the students.

4. *The corps of cadets*, commanded by a major general, which consists of young men in training for the position of officer, distributed among six "cadet houses," situated, respectively, at Koslin, Potsdam, Wahlstatt, Bensberg, Plon, and Oranienstein, whence they are passed to the central cadet school at Gross-Lichterfelde. Except that the pupils are uniformed, armed, and drilled, the cadet houses and the central cadet institute correspond in organization and course of study to the so-called *Real* schools (*Real Schulen*), at which young men are prepared for the higher technical schools (*Technische Hochschulen*). The *Real* schools again bear a certain resemblance to the Gymnasia, graduates (*Arbiturienten*) from either of which are ripe for the university or a higher technical school and need not undergo the ensign examination, the chief distinction between the *Real* school and the Gymnasia being that special attention is devoted in the former to the dead languages and classics, and in the latter to the sciences.

The Government maintains eleven "war schools" for the further education of the *officer aspirants*. There are in addition two war colleges, one at Berlin and one at Munich. There are two ordnance schools, an academy for the medical education of men who desire to become members of the medical corps, a military veterinarian college, two technical military academies for the further instruction of engineers and artillerymen, 10 noncommissioned officers' schools, and 9 schools for enlisted men or sons of soldiers or noncommissioned officers who desire to qualify for the grade of noncommissioned officer in the active army. In addition to these schools, which are maintained by the Government for the education of future officers and noncommissioned officers, it maintains other schools for the further training of the active officer. There are two infantry firing schools, a firing school for field artillery and for foot artillery, four schools for equitation, two cavalry telegraph schools, eight schools for horse-shoers, and one gymnastic school for the instruction of noncommissioned officers in work connected with the physical training of the soldier and for bayonet and other fencing.

14. FRANCE.

The Government maintains the following schools for the instruction of officers: the War Academy, in Paris, and the following post-graduate schools for officers: School of Application for Artillery and Engineers, 1; School of Application for Cavalry, 1; School of Application for Ordnance Officers, 1; School of Application for Medical Corps, 1.

The following preparatory schools are maintained: Polytechnic; special military school at St.-Cyr; military school for infantry at

St.-Maixent; school for cavalry at Saumur; school for artillery and engineers, 1; school for military administration (Vincennes), 1; school for candidates for the military service, 1.

There is also a school for developing teachers of physical training throughout the army; a central musketry school; an artillery firing school; two other musketry schools for infantry; and one school for engineers. There is also a school for the instruction of officers belonging to the railway service; and at each army headquarters is maintained a school for the artillery officers serving with that corps-district. In the last few years a school for the scientific study of aeronautics has been established.

15. AUSTRIA-HUNGARY.

In addition to the cadet schools before mentioned, the Government maintains a war college at Vienna for the education of general staff officers; a school for military administration, to which are sent officers who are serving in the supply services; courses are also prescribed for *intendant* officers, superior supply officers, officers charged with purchase of clothing and equipment, subsistence officers and train. There is also maintained at each brigade headquarters a school for cavalry officers. There is a higher artillery school and a school for the technical branches of engineers, both military and civil. There are two telegraph schools, one for cavalry and one for infantry; a school for ordnance officers; a firing school for infantry; three schools for equitation, one of which is for infantry officers; a firing school for artillery; and a separate riding school for the training of drivers and riding instructors in the field artillery.

16. ITALY.

In addition to the military schools before mentioned, there are preparatory military schools maintained, one at Naples and one at Rome. These are for the sons of officers, and their education is carried out at the Government expense. The war college, at Turin, is charged with the instruction and training of general staff officers. There is a school of application for members of the sanitary service, somewhat similar to the schools of application for artillery, engineers, and cavalry. There is a central school of fire; a musketry school for infantry, at Palma, and one for field artillery at Nettino, while at Rome there exists a school for the instruction of the Royal Carbineros, a species of military gendarmerie, and a school for fencing and gymnastics is maintained at the same locality.

17. RUSSIA.

Schools.—In addition to the schools before mentioned the Government maintains a war college at Petrograd for the education of general staff officers; a topographical school for training officers who belong to the topographical section of the general staff: an intendance school; an artillery academy; an engineer academy; a medical academy; a law academy; an electro-technical school; and a number of schools for the instruction of noncommissioned officers. For the further training of officers in schools of application, there is maintained a school for infantry fire; school for field artillery; a school for equitation for cavalry; and an aeronautical school.

18. GREAT BRITAIN.

The following schools are maintained by the Government: Royal Staff College, for the education of general staff officers; Royal Military Academy; Royal Military College; Ordnance College; Cavalry School; Camel Corps School; School of Gunnery; School of Military Engineering; Central Flying School; School of Musketry; Schools of Electric Lighting; Army Signal School; A. S. C. training establishment; Royal Army War College; Army Veterinary School; Royal Military School of Music; Duke of York's Royal Military School; Queen Victoria School.

METHODS OF ENTERING THE REGULAR ARMY—ROYAL MILITARY COLLEGE, SANDHURST.

Methods of entry.—There are two methods of obtaining admission to the Royal Military College:

1. By successful competition at an army entrance examination.

(a) The following enter without competition, provided they qualify in the obligatory subjects at an army entrance examination: King's Cadets; Honorary King's Cadets (10 annually); King's Indian Cadets (20 annually); Honorary King's Indian Cadets (3 annually); Pages of Honor.

2. On the nomination of the army council.

General qualification.—Candidates must be unmarried, and will not be accepted unless, in the opinion of the army council, in every way suitable to hold a commission.

All successful and nominated candidates must pass a medical examination.

Age.—Candidates must have attained the age of 17 and must not have attained the age of 19½ (the half year being reckoned by calendar months) on the 1st of June and 1st of December, respectively, for

admission to the college at the commencement of the ensuing spring and autumn terms.

Candidates of the West India Regiment may compete if under 21 years of age on the above dates.

ARMY ENTRANCE EXAMINATION.

General outline of the army entrance examination.—The army entrance examination is both qualifying and competitive, i.e., a candidate to be considered successful must obtain a qualifying minimum of marks in certain obligatory subjects and must, in addition, gain a sufficiently high place on the list to entitle him to one of the cadetships offered.

Certificates required.—The candidate, when called upon to do so, will be required to furnish the following:

1. An extract from the register of his birth; or, if this can not be obtained, a certificate of his baptism, or other documentary evidence accompanied by a statutory declaration made by one of his parents or guardians before a magistrate, giving the exact date of birth.

2. If the candidate holds a commission in the special reserve of officers, militia, or territorial force, a recommendation from the commanding officer of the regiment.

3. On Form A the names of two responsible referees (not tutors, relatives, or near connections), who having known him during the four years previous to the examination will furnish a certificate as to character.

Subjects:

Class I—

Obligatory—

English.

English history and geography.

Mathematics A (elementary).

French or German.

Class II—

Optional—

German or French.

Latin.

Greek.

Science (physics and chemistry).

Mathematics B (intermediate).

Mathematics C (higher).

All subjects in Class I must be taken up, and a qualifying minimum of 33 per cent of the maximum marks must be obtained in each. Only two of the subjects in Class II may be taken up, and if one of these is a modern language it must be different to the modern language selected in Class I.

In addition, free-hand drawing, to which 400 marks are allotted, may be taken up.

Certificate A, obtained in a unit of the officers' training corps, will entitle the holder to receive 200 marks.

NOMINATION TO CADETSHIP BY THE ARMY COUNCIL.

Conditions.—A certain number of suitable candidates, recommended by the headmasters of schools recognized for the purpose, are nominated to cadetships by the army council each half year.

To be eligible to recommendation by the headmaster a candidate must—

1. Have attended continuously for at least three years one or more approved schools and remain in residence at the school until the end of the term immediately preceding the nomination.

2. Be within the prescribed limits of age.

3. Be an efficient member of the school contingent of the officers' training corps.

PRIZE CADETSHIPS.

A certain number of prize cadetships are awarded to successful competitors (other than candidates for commissions in the West India Regiment) in order of merit at each half-yearly army entrance examination. Emoluments varying in value up to a maximum of £255 may be attached to a prize cadetship.

ROYAL MILITARY ACADEMY, WOOLWICH.

Method of entry.—Admission to the Royal Military Academy can only be gained by successful competition at an army entrance examination.

General qualifications.—Candidates must be unmarried, and will not be accepted unless, in the opinion of the army council, in every way suitable to hold a commission.

All successful candidates must pass a medical examination.

Age.—Candidates must have attained the age of $16\frac{1}{2}$, and must not have attained the age of $19\frac{1}{2}$ (the half year being reckoned by calendar months) on the 1st of June for the summer and on the 1st of December for the winter army entrance examination.

ARMY ENTRANCE EXAMINATION.

General outline of army entrance examination.—Same as for the Royal Military College.

Certificates required.—Same as for the Royal Military College.

Subjects:

Class I—

Obligatory—

English.

English history and geography.

Mathematics, A (elementary).

French or German.

Science (physics and chemistry).

Mathematics, B (intermediate).

Class II—

Optional—

German, French, Latin, or Greek.

Mathematics, C (higher).

All subjects in Class I must be taken up. Only one of the subjects in Class II may be taken up, and if it is a modern language it must be different to the modern language selected in Class I.

In addition, free-hand drawing, to which 400 marks are allotted, may be taken up.

Certificate A, obtained in the officers' training corps, will entitle the holder to receive 200 marks.

A candidate may, if eligible in respect to age, compete for both Royal Military Academy and Royal Military College at the same examination by taking up the subjects which are obligatory for the Royal Military Academy.

Medical examination.—Same as for the Royal Military College.

Prize cadetships.—A certain number of prize cadetships are awarded to successful competitors in order of merit at each half-yearly army entrance examination. Emoluments varying in value up to a maximum of £255 may be attached to a prize cadetship.

ROYAL MILITARY COLLEGE, KINGSTON, CANADA.

General qualifications.—The college has a wider scope than the English military colleges, as, besides military subjects, it teaches civil engineering, surveying, etc.

Seven commissions in His Majesty's Regular Army are granted annually to the students, viz: Royal Engineers, 1; Royal Artillery, 1; Cavalry, 1; Infantry, 1; Indian Army, 1; Army Service Corps, 2.

Candidates must be British subjects, and they or their parents must have resided in Canada for two years immediately preceding the examination; short periods of absence in Europe for purposes of education to be included as residence.

Age.—Between 16 and 20 on January 1st, preceding the examination.

General outline of tests which must be passed.—Admission by competitive examination.

COMPETITIVE EXAMINATION.

Papers and certificates required with application.—(1) Certified abstract from birth register in duplicate, or if not procurable, a declaration made before a magistrate; (2) a certificate of good character.

Subjects.—(1) Mathematics; (2) grammar and composition, English or French; (3) geography; (4) history, British and Canadian; (5) French; (6) Latin; (7) geometrical drawing; (8) chemistry; (9) free-hand drawing.

Medical examination.—The candidate must be medically examined before admission to the competitive examination.

MILITARY FORCES OF THE SELF-GOVERNING DOMINIONS AND CROWN COLONIES.

General qualifications.—A certain number of commissions are granted each half year to candidates from the self-governing dominions and Crown Colonies.

Candidates who fulfill the following conditions may be nominated by the governor general of a dominion or by the secretary of state for the colonies in the case of Crown Colonies. A candidate must:

(a) Be unmarried.

(b) Have attained the age of 20 and not have attained the age of 25 on April 1st if nominated in January, or on October 1st if nominated in July.

(c) Have qualified at any army entrance examination, or have passed one of the examinations accepted in lieu thereof.

(d) Have served as an officer in the local forces of the dominion or colony from which he is nominated, and have attended two annual trainings (each in a distinct year), or have seen active service in the field. A candidate for a commission in the Royal Artillery must be an officer of the artillery.

(e) Have been attached to a British regular unit or to a unit of the permanent military force of the dominion or colony for two consecutive months at any time *after* the completion of his first training, and have obtained a satisfactory report.

ARMY ENTRANCE EXAMINATION.

To whom to apply and date of application.—A candidate must apply to his commanding officer at such date as will allow of the application reaching the war office not later than April 1st or September 1st for a June or November examination, respectively.

Subjects.—Same as for candidates from the special reserve, militia, or territorial force.

FROM THE RANKS.

General qualifications.—A candidate for a commission from the ranks: (1) Must be specially recommended by his commanding officer; (2) must not be of lower rank than corporal; (3) must have two years' service; (4) must have a first-class certificate of education; (5) must have a clear regimental conduct sheet; (6) must be unmarried.

Age.—Must be under 26 years of age.

Medical examination.—A certificate from a medical officer as to fitness for service at home and abroad must be attached to the recommendation of the commanding officer.

General outline of tests which must be passed.—After the candidate's name has been approved by the Secretary of State he must pass in subject (a) as laid down in the King's Regulations. He is then duly gazetted, and granted an outfit allowance of £100.

IV. CONCLUSIONS.

19. COMPARISON.

A study of the various measures employed by the several European powers to recruit their corps of active officers brings out the following points:

1. In the German and English armies all officers come from the same school or from schools of similar rank.

2. In Austria-Hungary, Italy, and Russia there exists to a more or less extent, as in France, a certain dualism of origin.

3. The noncommissioned officers are recruited from the inferior material coming from military schools or from those who fail to qualify in an officer's examination.

4. All promote selected noncommissioned officers.

5. In Italy and France the material coming from the last-mentioned class receives a training at special schools before being commissioned.

RESERVE OFFICERS.

In all armies the officers for the reserve or the third line are recruited in practically the same way, viz: From former officers of the army who are furloughed, and from special candidates who have had at least a year's service with the colors or at a military school. Every endeavor is made to get as many reserve officers as possible, and, after having these men placed "at disposal" or "en complement," a certain period of training at stated intervals is required of them all. This is absolutely necessary as in no other way can they be kept up to a fairly high standard of training.

Attention must be called to the fact, however, that all these officers must be trained in the same great school, the active army (our Regular Army) or under its immediate guidance and example.

20. REMEDY AND RECOMMENDATION.

While our military system differs greatly from those of other nations, and our social conditions do not provide us with a ruling class, a satisfactory solution is nevertheless possible. The fact that our educational institutions provide us with a class superior in education and training to the average citizen who enlists to make up the rank and file of the Army makes it possible to solve this problem in a scientific manner. By taking advantage of this state of affairs, we are enabled to avail ourselves of the moral factor of superior knowledge and position produced by education.

The possibilities of the system proposed are set forth in a War College study entitled "Educational Institutions as a Source of Supply of Officers," and, therefore, this phase of the problem is not discussed here, but a remedy is proposed by organizing legally in each of these institutions one or more units of the reserve officers' training corps.

21. THE RESERVE OFFICERS' TRAINING CORPS.

Object.—The primary object of the reserve officers' training corps is to provide reserve officers for the Regular Army, its reserve units and the continental army, by maintaining at our civil educational institutions, college and university, as well as preparatory, a standard course of military instruction.

The organization of a unit at any educational institution must of necessity be based on agreement between the War Department and the institution itself, and a just balance must be maintained between the efforts of the War Department to obtain these badly needed trained officers and those of the institutions to provide a suitable academic training for each matriculate.

OUTPUT.

There are 567 colleges in the country with an enrollment of 170,000 male students, and the probability of obtaining a large number of trained officers by means of the reserve officers' training corps can be readily grasped. Of these 567 colleges, 62 collegiate institutions have an enrollment in their military departments of 26,352 students, and those graduated in 1915 numbered 5,200. If all of the 567 could be interested or incorporated in this movement the annual output might reach 15,000, or about 50 per cent of the probable number, 34,000, who are graduated each year.

During the past 10 years 44,529 young men have been graduated from collegiate institutions maintaining military departments, and these young men have pursued a course, both practical and theoretical, which insures a working knowledge of at least the rudiments of military training. Since 1912 the training has become more intensive and the graduates under this new system, numbering 15,323, are now better prepared to be officers; but it should be remembered that under the proposed system the course would be thoroughly standardized and the additional six months' service in the Regular Army would complete the training already started in the reserve officers' training corps.

In the past two months a number of universities of the nonmilitary type have indicated, through a voluntary movement on the part of the undergraduates, the desire of the students themselves to undergo a course in military training, and those students have asked for help from the War Department.

The proposed training corps, therefore, not only reaches out to include the institutions where this willingness is manifested but it also includes the land-grant institutions, which now, under the provisions of the act approved July 2, 1862, have compulsory military training for their male students. In fact, any college or university complying with necessary requirements can have organized thereat a unit of the corps.

COMPOSITION.

In order to provide for standardized training it is thought best to provide in the law for the organization of two divisions of the training corps: (1) The senior division, consisting of units organized at colleges and universities, and (2) the junior division, organized from units at all other institutions. The preparatory-school type of institution, such as St. John's Manlius, Culver Military Academy, Shattuck School, St. John's, Delafield, etc., is particularly well adapted for the organization of a unit of the junior division.

It is intended that the junior division shall act as a feeder for the senior division. The majority of students who are now receiving instruction in military schools of the preparatory type go to some college.

A large number, however, from the public and grammar schools of the country undertake a college education, and if provision be made for such institutions the efficiency of the senior division of the corps will be enhanced. For this reason it is believed that the junior division is an absolute necessity; first, with the idea of providing a center for elementary military instruction, and, second, to make use of these useful preparatory instructions.

In order to provide officers for the several branches of the service, the organization of training corps units of infantry, cavalry, field artillery, engineers, sanitary, and signal units will be necessary. A carefully prepared system of instruction has been laid out so as not to duplicate in the senior division the work given in the junior division. When cadets join the senior division a certain number of credits will be given to enable this transfer to be made on a just and sound basis.

INSTRUCTION.

The instruction laid down for cadets, until organizations other than infantry are formed, should include the following: (later schedules of instruction for cavalry, field artillery, etc., will have to be prepared.)

SENIOR DIVISION.

Subjects:

1. Infantry Drill Regulations (theoretical and practical), school of the soldier, school of the squad, school of the company, and school of the battalion.
2. Manual of Guard Duty.
3. Field Service Regulations: Service of information, service of security, marches, shelter, and orders.
4. Tables of organization, to include the (company) regiment.
5. Small Arms Firing Regulations: Theoretical principles, estimating distances, and target practice.
6. Military Law (Manual of Courts-Martial).
7. Topography: Map reading and road and position sketching.
8. Troop leading.
9. Military policy and military history.
10. Military hygiene.
11. Field engineering.

JUNIOR DIVISION.

Subjects:

1. Infantry Drill Regulations (practical).
2. Manual of Guard Duty.
3. Physical drill.
4. Military hygiene.
5. Visual signaling.
6. Bayonet exercises and bayonet combat.
7. Military history.
8. Small-arms firing (practical).
9. Camping and camping expedients.

CAMPS.

To afford practical experience for cadets of both divisions the initiation of a scheme for a number of camps should be required, especially at the institutions during the academic year. This will also enable the cadets of the senior divisions to obtain practical training

with troops; it being a well-known maxim that no school can provide so efficient a method of practical instruction for an officer as duty at the head of his unit.

Every opportunity should be given these units to serve at the side of organizations of the Regular Army, and with this end in view the law has been drawn to provide for this contingency.

It will be found necessary to provide Federal funds for the purpose of transporting members of the reserve corps to and from camps of instruction, as well as to provide for their messing while in attendance thereat. A number of different suggestions have been made relative to this important matter; but the principle that some provision must be made for these items of expense for the student is most apparent, and should be provided for by a definite amount of money appropriated for this purpose.

CONTROL OF INSTRUCTION.

It is manifest that each unit should be trained by its own officers under the supervision and guidance of the officer detailed at the institution. Experience gained from numerous inspections at various institutions shows that at least one officer of the Army should be assigned to every 400 cadets enrolled in the military department of the institutions.

The detail of noncommissioned officers at a number of institutions has shown that the services of suitable men can be utilized to great advantage. They have been valuable as armorers, instructors in small-arms practice, and to assist the professor of military science and tactics detailed thereat in many other ways.

Provision is therefore made in the proposed act for the detail and assignment, of not to exceed 500, for duty with units of the reserve officers' training corps. The duty required of these enlisted men will be analogous to that now performed by noncommissioned officers detailed with the Organized Militia.

Harmonious and coordinate control by the General Staff of the Army should exist, so as to assure standardization and also arrange for a proper flow of officers into the reserve corps from this reservoir.

CONDITIONS OF SERVICE.

It should be clearly understood that cadets of the reserve officers' training corps are not, as such, liable for active service; but their duty consists in undergoing training laid down for them upon entry into the unit.

University and school authorities should retain the ordinary powers of supervision and discipline, and it should be made clear to all that the maintenance of a high standard of discipline is needed to

assist in turning out efficient officers at the end of the training prescribed for the reserve officers' training corps.

In providing for the organization of a unit or units at any institution the number of students guaranteed under instruction should be a minimum of 100, while the minimum age of 13 years is provided for in the law, so as to include the youngest student in the preparatory type of institution. Upon enrollment as a member of the corps a distinctive badge should be worn, showing that the student is being trained for a commission as a reserve officer of the national forces.

Upon reaching the time for graduation the trained student should then be given a temporary commission as an additional second lieutenant in the Regular Army and undergo an intensive course of training as an officer, thus fitting him for assignment to duty with units of the reserve army or with the continental army. If a professional man, while a reserve officer, desires to move to any particular part of the country, a transfer as an officer to a reserve formation of the Regular Army or to a unit of the continental army organized in the vicinity of the locality in which he is required by his profession to locate can be easily accomplished.

Before entering upon his six months' training each reserve officer should be required to take the oath of allegiance and obligate himself to serve for 10 years as a reserve officer unless otherwise discharged by proper authority. This six months' service, which is in addition to his reserve service, is really a probationary term, which should enable his superior officers to determine whether or not he should be retained as a reserve officer, and if so, what grade he should be given. This provision has another advantage in that it will provide a certain number of officers for duty with Regular troops and to some extent counteract the effect of too much detached service for Regular officers, which will undoubtedly be quite large when it comes to organizing and training the proposed continental army units. This prevents a depletion of commissioned personnel serving with the Regular forces for at least six months of the year.

Briefly stated, a boy who is 13 years of age will enter the junior division of the reserve officers' training corps, pass through the course of instruction required, including such camps as may be provided, either at the institution or at some selected place during the summer vacation, and at the age probably of 18 years pass into the senior division. Here he remains for a definite period of from two to four years, and attends such camps as may be required of him during that period of training. Upon graduation, if found qualified, he acquires the status of a reserve officer and becomes a temporary additional second lieutenant for the period of six months, and if qualified, after undergoing this intensive course of instruction and training, he is assigned with definite rank to the reserve officers' train-

ing corps and to such duty as the War Department may consider necessary.

Exception.—It may be found that there will be members of the junior division who will have reached an age of approximately 19 years upon graduation from the preparatory school and from its training-corps unit, and for this reason some steps should be taken to make use of this material, especially if they have undergone *a special course of instruction*, have qualified and been pronounced proficient by the officer detailed with the unit at the institution. Proficiency in all subjects required for graduation from the senior division of the reserve officers' training corps should be assured by examination, both practical and theoretical. Exceptional cases will undoubtedly exist, and each one should be decided upon its own merits, because it is believed that the large majority of these young men in the junior division are too immature and have not sufficient academic or military training to be safely commissioned as reserve officers.

ADVANTAGES OF THE SYSTEM.

The main advantage of the proposed system is based on the fact that it makes use of existing agencies and the cadet units as they now stand, organized under the provisions of section 1225, Revised Statutes. No extra expenses will be needed for their organization, but under the patriotic directorship of experienced schoolmen who have been in this business for a number of years the corps unquestionably will expand and increase in efficiency.

To the youth of the country whose parents are financially able to support their children at school and college the system offers a decided benefit, not only from a physical standpoint and from the viewpoint of training a young man to perform his duties as a citizen in time of great national stress, but also because his future economic efficiency will be increased thereby.

A military training is most valuable educationally, because it not only quickens the mind, but also hardens the body. It seems but logical that parents would be pleased to have their sons undergo such training, not only in the junior division, but also that laid down for the senior division. This for the reason that the conditions as to future active service do not apply during service in the training corps, and no training corps unit could be called upon for war service. In addition, this training takes a young man before he has embarked on his life's profession, and therefore from an economical standpoint, when he is best able to receive preliminary training at this time, especially if he does not intend to take up a military career. In any event the physical and mental discipline obtained will be a valuable asset in his future career.

COMPARISON WITH THE ENGLISH OFFICERS' TRAINING CORPS.

It will be of interest to compare results obtained under a system somewhat similar to the one proposed, which has been in existence in Great Britain since 1908.

At the beginning of the war, in August, 1914, 6,322 men of the officers' training corps were gazetted for duty in the newly formed units of the Kitchener Army. From August, 1914, to March, 1915, 20,577 were appointed officers and, in addition, 12,290 served in the ranks of the new army.

When it is considered that the total number of colleges is far below the number in existence in the United States and the number of students very much less, it is clear that there exists in this country a source for such officers not excelled in any other.

A number of reports have been received as to the usefulness and efficiency of these officers who were trained in the British officers' training corps before and during the early part of the present war. Many suggestions have been made looking toward an improvement of this corps for the future, and among the most prominent are the following:

* * * On the principle, therefore, of striking while the iron is hot, I urge that our first act of peace be to make membership of the officers' training corps compulsory on all members of schools and universities. There are other reasons for this step, and the chief of them is discipline. The officers' training corps is purely an instructional and not a fighting force; compulsion to serve can meet with none of the objections which might possibly be urged against compulsion to fight. It is a hopeless travesty of discipline, and all that it implies, to put into the hands of boys and very young men the power to resign a duty out of pique or because the work appears irksome. However successful an officers' training corps, however full its ranks, its discipline can never be truly of the military type if members feel that the key to any difficult situation is in their hands and not in the keeping of their officers. If the last word is allowed to remain with the embryo soldier, he is learning the worst possible lesson he can learn and one that goes far to destroy any benefit he may otherwise have gathered from his apprenticeship. With men of mature age and with the honor of the regiment, permanent and not ephemeral, in their thoughts, this danger is not so acute. Nevertheless, it is a very real argument against any form of voluntary service, and unanswerable, unless the inducements to continue to serve are such as to outweigh any temporary temptation "to get one's own back."

There is, too, another strong reason for making membership of the officers' training corps compulsory, and that is to assure that there will be large numbers from which to make choice of officers. Under the voluntary system some of the very best men and boys are lost, and the more numerous the interests of the individual and the more capably they are fostered the greater the temptation to shirk his more obvious duty. I am not amongst those, if any such exist, who consider that training in an officers' training corps necessarily produces an officer. There are some men who will never make leaders, and the opportunity must exist to choose only those who have the natural aptitude as

well as the special training. Methods adopted perforce in the midst of a tremendous war will naturally give place in peace time to more reasoned judgment and keener discrimination. This will not be possible unless there are numbers—big numbers—to choose from. If the position of officers is made really difficult of attainment in all except the pecuniary way, the greater will be the competition to enjoy it. Once establish such a situation, as may easily be done in the after-enthusiasm of the war, and the problem of officering the special reserve and territorial force in peace time will no longer be a problem at all, always providing that such officers are treated with the honor and privileges which their place deserves. * * *

The principle laid down above has been found to be sound by officers who, in the past few years, have been engaged in the inspection of cadet units at our civil educational institutions, and they have recommended accordingly. It is interesting to note that this recommendation is sound and confirmed by actual war experience in England.

If this last suggestion be carried out at institutions at which an officer of the Army is detailed, there need never be any anxiety relative to furnishing the immense number of officers—about 60,000—needed for our next great war.

The training required for reserve officers is discussed in the War College study on "The Training and Uses of the Proposed Officers' Reserve Corps."

For convenience of reference a draft of the provisions creating the proposed officers' reserve corps is appended hereto.

No more important a subject than this can be brought up for discussion, and none is of greater interest. The soul of the Army rests in its officers, and a standardization of the character and training of this class should be assured above all things. Hence, the Regular Army should form the sole exemplar and guide, and the best material in its corps of officers should serve as instructors for reserve officers.

APPENDIX A.

OFFICERS' RESERVE CORPS.

For the purpose of securing a reserve of officers available for service as temporary officers in the Regular Army as provided for in this act, and in section 8 of the act approved April 25, 1914, as officers for recruit rendezvous and depots, and as officers of volunteers, there shall be organized, under such rules and regulations as the President may prescribe, not inconsistent with the provisions of this act, an Officers' Reserve Corps of the Army of the United States.

The President of the United States is authorized to appoint and commission, by and with the advice and consent of the Senate, reserve officers in all grades up to and including the grade of major, such citizens of the United States as

upon examination prescribed by the Secretary of War are found physically, mentally, and morally qualified to hold such commission, the persons so commissioned to constitute and be known as the reserve corps of the several arms, corps, or departments in which they may be found qualified and commissioned by the President.

All persons now carried as duly qualified and registered, pursuant to section 23 of the act of Congress approved January 21, 1903, shall, for a period of three years after the passage of this act, be eligible for appointment in the Officers' Reserve Corps in the arm, corps, or department, for which they shall have been found qualified without further examination, except the physical examination, subject to the limitations as to age and rank herein prescribed.

Commissions duly issued by the President to officers of the officers' reserve corps shall be in force for a period of five years unless terminated in the discretion of the President; such officers may be recommissioned either in the same or higher grade for a consecutive period of five years, subject to such examinations and qualifications as the President may prescribe.

Officers of the officers' reserve corps shall have rank therein in the various arms, corps, and departments of said reserve corps according to grades and to length of service in their respective grades, and when employed on active duty shall rank next after all officers of same grades in the Regular Army and above all of the same grades in the Organized Militia and Volunteers.

When a volunteer force is authorized the Secretary of War may order officers of the reserve corps, subject to such subsequent physical examinations as he may prescribe, to temporary duty with the Regular Army in grades thereof which can not, for the time being, be filled by promotion as officers in volunteer organizations, as officers of recruit rendezvous and depots in such numbers as may be authorized by law. While such reserve officers are on such service they shall, by virtue of their commission as reserve officers, exercise command appropriate to their grade and rank in the organization to which they are assigned and shall be entitled to the pay and allowances of the corresponding grades in the Regular Army with increase of pay for length of service as now allowed by law for officers in the Regular Army, to be computed on active duty only from the date upon which they are required by the terms of their order to obey the same. Officers of the reserve corps shall not be entitled to retirement or retired pay and shall be entitled to pension only for disability incurred in the line of duty and while in active service.

To the extent provided for from time to time by appropriations the Secretary of War is authorized to order reserve officers to duty with troops or at field exercises for periods not to exceed two weeks in any one calendar year, and while so serving such officers shall receive the pay and allowances of their grade. With the consent of such officers the Secretary of War is authorized to prolong this period or to order them for duty on boards or for consultation or advice to the extent justified by the amount appropriated and the public needs.

After all officers of the reserve corps of any arm, corps, or department have been called into active duty nothing should be construed to prevent the appointment of other officers of Volunteers in such arms, corps, or departments in such numbers and with such rank and pay as may be provided by law, nor should anything be construed to prevent the commission of any officer of the Regular Army as an officer of Volunteers before all the officers of the reserve corps have been utilized.

APPENDIX B.

[Jan. 27, 1916.]

A BILL To establish a reserve officers' training corps.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of securing a sufficient reserve of officers for the military forces of the United States the President is hereby authorized to establish and maintain in civil educational institutions a reserve officers' training corps which shall consist of a senior division organized at universities and colleges requiring four years of collegiate study for a degree, including those State institutions that are required to provide instruction in military tactics under the provisions of the act of Congress of July second, eighteen hundred and sixty-two, donating lands for the establishment of colleges where the leading object shall be the practical instruction of the industrial classes in agriculture and the mechanic arts, including military tactics, and a junior division organized at all other public or private educational institutions, and each division shall consist of units of the several arms or corps in such number and of such strength as the President may prescribe.

SEC. 2. That the President may, upon the application of any State institution described in section one of this act, establish and maintain at such institution one or more units of the reserve officers' training corps: *Provided*, That no such unit shall be established or maintained at any such institution at which an officer of the Army is not detailed as professor of military science and tactics or at any such institution which does not maintain under military instruction at least one hundred physically fit male students.

SEC. 3. That the President may, upon the application of any established educational institution in the United States other than a State institution described in section one of this act, the authorities of which agree to establish and maintain a two-years' elective or compulsory course of military training as a minimum for its physically fit male students, which course when entered upon by any student shall, as regards such student, be a prerequisite for graduation, establish and maintain at such institution one or more units of the reserve officers' training corps: *Provided*, That no such unit shall be established or maintained at any such institution at which an officer of the Army is not detailed as professor of military science and tactics, or at any such institution which does not maintain under military instruction at least one hundred physically fit male students.

SEC. 4. That the Secretary of War is hereby authorized to prescribe standard courses of theoretical and practical military training for units of the reserve officers' training corps, and no unit of the senior division shall be organized or maintained at any educational institution the authorities of which fail or neglect to adopt into their curriculum the prescribed courses of military training for the senior division or to devote at least an average of five hours per week per academic year to such military training; and no unit of the junior division shall be organized or maintained at any educational institution the authorities of which fail or neglect to adopt into their curriculum the prescribed courses of military training for the junior division or to devote at least an average of three hours per week per academic year to such military training.

SEC. 5. Eligibility to membership in the reserve officers' training corps shall be limited to students of institutions in which units of such corps may be established who are citizens of the United States or have legally declared their intention to become such, who are over thirteen years of age, and whose bodily

condition indicates that they are physically fit to perform military duty or will be so upon arrival at military age.

SEC. 6. That the President is hereby authorized to detail such numbers of officers of the Army, either active or retired, not above the grade of colonel, as may be necessary, for duty as professors and assistant professors of military science and tactics at institutions where one or more units of the reserve officers' training corps are maintained; but the total number of active officers so detailed at educational institutions shall not exceed three hundred, and no active officer shall be so detailed who has not had five years' commissioned service in the Army. Retired officers shall not be detailed under the provisions of this section without their consent. Retired officers below the grade of lieutenant colonel so detailed shall receive the full pay and allowances of their grade, and retired officers above the grade of major so detailed shall receive the same pay and allowances as a retired major would receive under a like detail. No detail under the provisions of this section shall extend for more than four years.

SEC. 7. That the President is hereby authorized to detail for duty at institutions where one or more units of the reserve officers' training corps are maintained such number of enlisted men, either active or retired, as he may deem necessary, but the number of active noncommissioned officers so detailed shall not exceed five hundred, and all active noncommissioned officers so detailed shall be additional in their respective grades to those otherwise authorized for the Army. Retired enlisted men shall not be detailed under the provisions of this section without their consent. While so detailed they shall receive active pay and allowances.

SEC. 8. That the Secretary of War, under such regulations as he may prescribe, is hereby authorized to issue to institutions at which one or more units of the reserve officers' training corps are maintained, such public animals, arms, uniforms, equipment, and means of transportation as he may deem necessary, and to forage at the expense of the United States public animals so issued. He shall require from each institution to which property of the United States is issued, a bond in the value of the property issued for the care and safe-keeping thereof, and for its return when required.

SEC. 9. That the Secretary of War is hereby authorized to maintain camps for the further practical instruction of the members of the reserve officers' training corps, no such camps to be maintained for a period longer than six weeks except in time of war or when war is imminent; to transport members of such corps to and from such camps at the expense of the United States so far as appropriations will permit; to subsist them at the expense of the United States while traveling to and from such camps and while remaining therein so far as appropriations will permit; to use the Regular Army, the continental army, and such Government property as he may deem necessary for the military training of the members of such corps while in attendance at such camps; to prescribe regulations for the government of such corps, and to authorize, in his discretion, the formation of company units thereof into battalion and regimental units.

SEC. 10. That the President alone, under such regulations as he may prescribe, is hereby authorized to appoint as a reserve officer, any graduate of the senior division of the reserve officers' training corps, or any graduate of the junior division, who shall have satisfactorily completed the courses of military training prescribed for the senior division and participated in such practical instruction as the Secretary of War may prescribe subsequent to graduation and who is twenty-one years of age and shall agree, under oath in writing, to serve the United States in the capacity of a reserve officer of the Army during a

period of at least ten years from the date of his appointment as such reserve officer, unless sooner discharged by proper authority, but the total number of reserve officers so appointed shall not exceed fifty thousand: *And provided*, That any graduate of the senior division of the reserve officers' training corps undergoing a postgraduate course at any institutions shall not be eligible for appointment as a reserve officer while undergoing such postgraduate course, but his ultimate eligibility upon completion of such postgraduate course for such appointment shall not be affected because of his having undergone such postgraduate course.

SEC. 11. That when any member of the senior division of the reserve officers' training corps has completed two academic years of service in that division, and has been selected for further training by the president of the institution and by its professor of military science and tactics, and has agreed in writing to continue in the reserve officers' training corps for the remainder of his course in the institution, including such camp training as shall be prescribed by the Secretary of War, he may be furnished at the expense of the United States with commutation of subsistence at such rate, not exceeding the cost of the garrison ration prescribed for the Army, as may be fixed by the Secretary of War, during the remainder of his service in the reserve officers' training corps.

SEC. 12. That any physically fit male citizen of the United States between the ages of twenty-one and twenty-seven years who shall have graduated prior to the date of this act from any educational institution at which an officer of the Army was detailed as professor of military science and tactics, and who while a student at such institution completed courses of military training under the direction of such professor of military science and tactics substantially equivalent to those prescribed pursuant to this act for the senior division, shall, after satisfactorily completing such additional practical military training as the Secretary of War shall prescribe, be eligible for appointment as a reserve officer and as a temporary additional second lieutenant in accordance with the terms of this act.

SEC. 13. That the President alone is hereby authorized to appoint and commission as a temporary second lieutenant of the Regular Army for a period of at least six months, with the allowances now provided by law for that grade, but with pay at the rate of \$100 per month, any reserve officer appointed pursuant to this act, and to attach him to a unit of the Regular Army for duty and training during the period covered by his appointment as such temporary second lieutenant, and upon the expiration of such service with the Regular Army such officer shall revert to his status as a reserve officer.

SEC. 14. That no reserve officer or temporary second lieutenant appointed pursuant to this act shall be entitled to retirement or to retired pay, and shall be eligible for pension only for disability incurred in line of duty in active service or while serving with the Regular Army pursuant to the provisions of this act.

SEC. 15. That in time of war the President may order reserve officers appointed under the provisions of this act to active duty with any of the military forces of the United States in any grades not below that of second lieutenant, and while on active duty they shall be subject to the Rules and Articles of War.

SEC. 16. All laws or parts of laws in conflict with the provisions of this act are hereby repealed.

APPENDIX C.

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THE STANDARDIZATION OF METHODS OF MILITARY INSTRUCTION AT SCHOOLS AND COLLEGES IN THE UNITED STATES

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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THE STANDARDIZATION OF METHODS OF MILITARY INSTRUCTION AT SCHOOLS AND COLLEGES IN THE UNITED STATES.

I. INTRODUCTION.

Before the methods of military instruction at educational institutions in the United States looking to the development of reserve officers can be standardized it is necessary to determine what qualifications a reserve officer should possess. It is believed that every effort should be made to bring the reserve officer up to the standard required for officers of the Regular Army, and that this object should be sought in laying down the course of military instruction to be followed by students with a view to their becoming reserve officers. Their training should be largely practical, and they should be ready to perform their duties at once when needed. The graduate of one of our colleges or universities has received a high degree of academic education, and the War Department need have nothing to do with this part of his training. Every effort should be devoted to giving him a practical knowledge of his duties as a company officer. He should be given a special course of military training, commencing with his first year in college and ending with a period of service with a unit of the Regular Army. The end in view should be to bring these graduates to the approved standard of military efficiency. It must be recognized that all institutions have not the same opportunities for instruction, but it is believed that by systematic and progressive methods of training the difficulties due to varying circumstances may be to a large extent overcome.

1. QUALIFICATIONS FOR ACCEPTANCE AS RESERVE OFFICERS.

All students should possess the following qualifications before being accepted as reserve officers:

(a) Should have a thorough knowledge of the school of the squad, company, and battalion.

(b) Should know the organization of a company, battalion, and regiment, and should have a knowledge of the organization of the Regular Army and its various units.

(c) Should understand the principles of attack and defense, and should be able to lead a company in attack and defense.

(d) Should understand the principles governing the employment of outposts, advance, flank, and rear guards, and should be able to direct and command a company acting in any one of these capacities.

(e) Should have a knowledge of scouting and patrolling, and should be able to lead a patrol.

(f) Should have a knowledge of the framing of orders, and should be able to give orders, either verbal or written.

(g) Should be fairly proficient in firing the rifle, and should have a knowledge of fire discipline, fire direction, and fire control, and should be able to command units in combat firing problems.

(h) Should have a thorough knowledge of extended order drills and the use of all the signals used.

(i) Should know how to write messages and make reports.

(j) Should be able to read a map and to make road and position sketches.

(k) Should know how to care for their men on the march and in camp, and should have a practical knowledge of personal hygiene and camp sanitation.

(l) Should be taught to appreciate the importance of cover.

(m) Should have a knowledge of military history and also of our past military policy and what our policy should be.

(n) Should be able to direct the construction of hasty intrenchments, obstacles, etc., and should have a practical knowledge of field fortifications.

(o) Should have a general idea of how soldiers and the Army are governed and the principles of military law and international law.

2. INSTITUTIONS AVAILABLE AS TRAINING CENTERS FOR RESERVE OFFICERS.

In any study of the methods of military instruction in the schools and colleges of the United States it is necessary to consider the institutions which are available or may be made available for the purpose of training young men in military science and tactics with a view to their use as reserve officers of the Regular Army, Continental Army, Volunteers, or Organized Militia. These institutions may be divided into two general classes, as follows:

(a) The college class, which includes colleges, universities, and land-grant colleges.

(b) Preparatory schools, which include public and private military schools and public and private high schools.

At the present time there are 64 institutions of class (a) and 38 institutions of class (b) which have military instruction under the

supervision of the War Department. Every effort has been made during the past few years to improve the nature of this instruction and to standardize it in the various institutions.

The importance of close-order drills and ceremonies has been minimized, and great stress has been laid upon the necessity for instruction which will be of practical value to the student in case he ever has to serve as an officer of a volunteer force. The standard of instruction has been greatly improved, due to these efforts.

In the year 1915 there were 27,179 students in class (*a*) and 5,134 students in class (*b*) undergoing military instruction.

The last annual report of the Commissioner of Education shows 567 institutions of class (*a*), having a total of approximately 173,000 students, and 13,714 public and private high schools, having a total of approximately 614,000 students. These figures show the possibility of extending military instruction in educational institutions throughout the country if more definite steps can be taken to recognize their value as a military asset.

3. COURSE OF INSTRUCTION RECOMMENDED FOR COLLEGES AND UNIVERSITIES HAVING MILITARY INSTRUCTION AS PART OF THE CURRICULUM, INCLUDING LAND-GRANT COLLEGES.

1. Infantry Drill Regulations: To include definitions, general principles, drills, ceremonies, etc., which a company officer must know.

School of the soldier.

School of the squad.

School of the company.

School of the battalion.

} Includes extended order.

2. Manual of interior guard duty: To include definitions, general principles, and practice in guard duty.

3. Physical drills: To include calisthenics, bayonet exercise, and bayonet combat.

4. Military hygiene: To include the principles of personal hygiene, camp sanitation, first aid to the injured, etc.

5. Field Service Regulations: To include definitions, general principles, etc. (Parts I, II, and III)—

Marching and camping.

Patrolling.

Advance guards.

Flank guards.

Rear guards.

Attack and defense.

Outposts.

Organization.

Administration.

6. Military history: A series of lectures on various wars, battles, and campaigns.

7. Military policy:

Our military policy.

Value of military training to a man and to a nation.

Duty of each citizen to render service in return for protection received.

Reserve officers corps—War and policy.

8. **Military field engineering:** General principles of field fortification, practical work in the construction of hasty intrenchments, and obstacles.
9. **Military map reading:** Instruction in reading contoured maps.
10. **Small Arms Firing Regulations:**
 - Definitions, general principles, and practical instruction in individual and collective firing.
 - Estimating distance problems and combat firing problems.
 - Theory of target practice.
11. **Military law:** Lectures on military law and military government and manual of general courts-martial.
12. **International law:** Lectures on general principles of.
13. **Psychology of war:** One or more lectures.
14. **Company administration:** Practical work and lectures.
15. **Military sketching:** Ability to prepare hasty sketches, embodying principal military features of the terrain sketched.

4. COURSE OF INSTRUCTION RECOMMENDED FOR SCHOOLS HAVING MILITARY INSTRUCTION AS PART OF THE CURRICULUM.

It will not be necessary to set as high a standard of military training for students of preparatory schools, for, as a rule, they will not be able to follow the course intelligently, and they are too young to be accepted as reserve officers upon their graduation from school. Many of these young men will subsequently go to college, and they should be given credit for such instruction as they may have already received. These preparatory schools will therefore, to some extent, act as feeders for the colleges and universities. In case a graduate of one of these schools, however, does show sufficient capacity, he can be given additional training with the Regular Army and accepted as a reserve officer, each case to be decided upon its merits at the time.

It is believed, therefore, that at institutions of the preparatory type the following course of military instruction should be adopted:

1. **Infantry Drill Regulations:** To include definitions, general principles, drills, ceremonies, etc., which a company officer must know.

School of the soldier.	}	Includes extended order.
School of the squad.		
School of the company.		
School of the battalion.		
2. **Manual of interior guard duty:** To include definitions, general principles.
3. **Physical drills:** To include calisthenics, bayonet exercise, and bayonet combat.
4. **Military hygiene:** To include the principles of personal hygiene, camp sanitation, first aid to the injured, etc.
5. **Military policy:** A few lectures on the military policy of the United States.
6. **Small-arms firing regulations:** Preliminary instruction in rifle firing.
7. **Company administration:** Practical work and lectures.
8. **Military map reading:** Instructions in reading a contoured map.
9. **Field service regulations:** Patrolling—Outposts.

Certain selected institutions of this class may be authorized to pursue the course of instruction recommended for institutions of the college class providing they are able to do so.

5. INSTITUTIONS WHICH DO NOT FIND IT PRACTICABLE TO ESTABLISH REGULAR MILITARY DEPARTMENTS.

There are quite a number of institutions in the country which will probably never consent to the establishment of regular military departments requiring the permanent organization of tactical units and frequent drills, but would be quite willing to introduce a course in military science and policy. Many applications have recently been received from institutions of this class. They seem to desire the introduction of a course of lectures on military history and military policy and a limited amount of practical instruction in minor tactics combined with some practical camp life such as is conducted at the students' summer camps. Most of these institutions are of the large college and university class, but there are also some of the smaller institutions of the preparatory class. Some of those which have already taken up this subject are Dartmouth, the University of Pennsylvania, the University of Michigan, Harvard, Yale, Princeton, and the University of Pittsburgh.

At present the law does not permit the War Department to aid these institutions in any way unless they agree to make military instruction a part of the college curriculum and their authorities agree to support the military department and place it on a plane with all other departments of the institution. They are not inclined to do this, and yet it does not seem advisable to disregard their interest in the matter of military instruction.

It is believed that much good could be done if authority could be obtained from Congress for the detail of officers to give lectures at such institutions, and, in addition, to impart such military instruction as the authorities or students may desire. It is suggested that a department of military history might be established at such institutions and the President authorized to detail officers to act as heads of such departments. It is believed that the influence of such officers at the institutions would soon tend to popularize military training and that, in a short time, the institution would be willing to establish a regular military department. In any case the officer would be able to educate a large number of young men along the proper lines and give to them a correct idea of our military history which would be of the greatest value to the cause of military preparedness. The same inducements should not in any case be offered to the graduates of these institutions as are offered to those who qualify under the standard laid down for reserve officers, but they might be appointed reserve officers after they had completed two or more tours at summer camps and the period of training with the Regular Army.

6. COURSE OF INSTRUCTION SUGGESTED FOR INSTITUTIONS NOT HAVING REGULAR MILITARY DEPARTMENTS.

1. Military history: A course of lectures on the more important wars, campaigns, and battles.
2. Military policy: A course of lectures on our military policy, what it has been in the past, and what it should be.
3. Minor tactics: A course of practical exercises on the map and on the ground, such as map problems, tactical walks, etc.
4. Camp of instruction: A camp of instruction each summer lasting from four weeks to two months, at which all kinds of practical instruction will be given.
5. Strategy: A course of five lectures, planned to show the intimate relationship between the statesman and the soldier.

7. STEPS NECESSARY TO SECURE STANDARDIZATION OF MILITARY EDUCATION.

There are certain logical steps which, if taken, will place the military education of the youth of our country upon a sound and efficient basis. To be really effective legislative authority will have to be secured. These steps will be taken up in the order of their importance.

(a) *Creation of reserve officers' training corps.*—Congress should create by law a "reserve officers' training corps." This law should authorize the Secretary of War to organize units of the reserve officers' training corps at various educational institutions in the country for the purpose of training students in military science and tactics. It should provide for the issue of necessary arms, uniforms, equipment, stores, etc., and for the detail of officers as professors of military science and tactics, and of enlisted men as assistants. It should authorize the Secretary of War to prescribe the courses of military instruction to be pursued and to determine the standard of military efficiency which graduates must attain before being accepted as reserve officers. It should authorize the Secretary of War to prescribe regulations for the government of the units of the training corps. A draft of a proposed law to carry these provisions into effect is appended hereto.

(b) *Additional officers, noncommissioned officers, and enlisted men as instructors.*—A sufficient number of officers of the Army should be authorized for duty as professors of military science and tactics and military instructors. Authority should be granted to detail enlisted men of the Army as assistants to the officers on duty as professors of military science and tactics.

The officers and enlisted men so authorized should be additional in their respective grades in the Army.

(c) *All necessary arms, uniforms, and equipment of the latest model and standard pattern should be issued for purposes of military instruction.*—At the present time military instruction can not be effi-

ciently conducted, due to the lack of necessary equipment. The cost of this equipment to the Government would not be great and, in any case, it would always be insured against loss by a bond, and it would always be available for use in case of emergency. Furthermore, there is no reason why the Government should not furnish uniforms to the students who are voluntarily taking this instruction in order that they may serve efficiently in time of war. As the Government does not pay them for their services, it should at least furnish them with all the means necessary for this instruction. Many of these students are poor and can little afford to purchase uniforms. Military instruction would become much more popular if these uniforms were furnished.

It is important that the latest model arms and equipment be issued for the reason that a reserve officer should become familiar with the arms and equipment which he is to use. These arms and equipments would furthermore be available as a reserve supply in case of war.

(d) *Supervision of training.*—The supervision of this training should be in the hands of a section of the General Staff. This section should have a field officer at its head and should consist of at least eight officers of the grade of captain for purposes of inspection, to handle all correspondence, make the details of officers, noncommissioned officers, enlisted men, etc.—in fact it should be the agency for the control of this work. Enough importance has never been attached to this duty by the War Department, and it has been considered as one of the least important duties of the General Staff. It is believed that the policy should be to more fully recognize the value of this work.

A large number of our reserve officers must, in any war, come from this source, and the greatest care should be exercised to see that they are properly trained in advance. In order to accomplish this it is necessary to keep in closer touch with the institutions and more frequent inspections should be made. The policy with respect to this instruction should be a continuing one and should not be changed every time there is a change in personnel of the officers having charge of it. The authorities of these institutions are inclined to attach as much importance to this instruction as the War Department does, and if the War Department will let it be known that it considers this work of the greatest importance then a great impetus will be given it. Then, again, every student who is won over to the military department of one of these institutions is pretty apt to become a friend of the Army and a believer in military training. From a political standpoint alone the effort and expense involved is worth while. The officers' training corps in England furnished 20,500 officers to the army between the opening of the war and the spring of 1915.

(e) *Graduates to enter reserve officers' corps.*—Provision in law must be made for taking these young graduates in the reserve officers' corps. It is very necessary that some inducement be made to the students who are willing to take military instruction as well as to those who are required to take it. They should be given assurance that if they qualify they will be accepted as officers of the reserve corps with all the rights and allowances and the duties of same. There is no use of wasting time and money to educate and train young men for military service unless some use is to be made of them. It is true that any training given is of some value, even though the student become lost to the reserve, but it should be the policy to keep a hold on these young men and to build up a dependable reserve of trained officers who will be at hand when needed.

(f) *Uniformity of instruction.*—All officers, noncommissioned officers, and enlisted men who may be detailed as military instructors at these institutions should be assembled prior to their entry upon such duty for instructions relative to same. Standardization in instruction can not be secured unless all the military instructors understand what is required of them and the manner in which they are to perform their duties. It is very difficult to accomplish this through correspondence, as has been found by practical experience during the past two years. Each officer places his own interpretation upon all instructions received, and it has been found very difficult if not impossible to get officers to follow a standard course laid down in orders. A system similar to that employed by the Recruiting Service should be adopted and all instructors should receive this preliminary instruction. Then they would all work along the same lines and uniformity would be secured.

(g) *Courses of instruction.*—Courses of instruction for each class of institution should be prescribed in detail, showing exactly what is required. These courses should be so outlined as to take into consideration the limitations and capabilities of each class of institution. The courses suggested as being proper are shown elsewhere in this paper in detail.

(h) *Minimum requirements.*—A minimum requirement as to the time to be devoted to military instruction in each class of institution should be prescribed. This provision is necessary in order that the proper amount of military instruction may be given and also that all institutions of the same class receive the same kind and amount of instruction.

(i) *System of bulletins.*—A system of bulletins, including photographic bulletins, showing the work as it is being carried out at the various institutions should be prepared and issued from time to time to aid instructors in the performance of their duties. These

bulletins should be prepared by the General Staff section directing the work whenever it desires to call attention to methods being used and to any changes in the work. These bulletins should be the medium through which cooperation is secured between the General Staff section and the institutions. They will be of the greatest value to officers on duty as instructors, as they will enable them to profit by the work of others, and they will tend to keep the instruction uniform at the various institutions.

(j) *Use of graduates.*—Provision should be made to use in some way all students who complete the prescribed course of military instruction. Those who are not qualified for service as officers can be used as noncommissioned officers and privates.

8. ARRANGING THE SCHEDULES OF THE COURSES.

The amount of time devoted to military instruction varies from two years to four years. In the institutions of the preparatory class the military training is, as a rule, compulsory during the entire time that the student attends school. At most of the land-grant colleges the military training is compulsory for two years, while at some of them and at all of the military colleges the training is compulsory during the entire time.

There is a tendency to decrease the number of years required of students for graduation at the land-grant colleges. The Department of Agriculture has stated that it is the intention to have courses of two and three years. It is thought desirable, therefore, to make the course in military training a course of two years. It will be necessary to prescribe the manner in which the various subjects shall be taken up and completed, in order that the work may be standardized and completed in a logical manner.

Any student who completes any part of the military course at an institution should be given credit in case he transfers to another institution.

In order that proper supervision may be had of the work, the courses of instruction should be divided into two yearly periods.

It is not practicable to show in this paper just how the courses suggested should be scheduled, as the work to be covered each year will largely depend upon the local conditions at each institution. It is only essential that at the end of the stated period at such place all students shall have received the same kind and amount of military instruction.

The preparation of the schedule of the courses should therefore be entrusted to the professor of military science and tactics at each institution.

9. USES OF THE RESERVE OFFICERS' TRAINING CORPS.

The officers' reserve corps is to be used as a reservoir from which to take officers as needed for line and staff of reserve forces, of volunteers, and for temporary appointments in the Regular Army, as provided for in section 8 of the act of Congress to provide for raising the volunteer forces of the United States in time of actual or threatened war, approved April 25, 1914.

The reserve officers' training corps will serve as one of the most important agencies for training young men to become officers in the officers' reserve corps.

APPENDIX A.

[Jan. 27, 1916.]

A BILL To establish a reserve officers' training corps.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of securing a sufficient reserve of officers for the military forces of the United States the President is hereby authorized to establish and maintain in civil educational institutions a reserve officers' training corps, which shall consist of a senior division organized at universities and colleges requiring four years of collegiate study for a degree, including those State institutions that are required to provide instruction in military tactics under the provisions of the act of Congress of July second, eighteen hundred and sixty-two, donating lands for the establishment of colleges where the leading object shall be the practical instruction of the industrial classes in agriculture and the mechanic arts, including military tactics, and a junior division organized at all other public or private educational institutions, and each division shall consist of units of the several arms or corps in such number and of such strength as the President may prescribe.

SEC. 2. That the President may, upon the application of any State institution described in section one of this act, establish and maintain at such institution one or more units of the reserve officers' training corps: *Provided*, That no such unit shall be established or maintained at any such institution at which an officer of the Army is not detailed as professor of military science and tactics or at any such institution which does not maintain under military instruction at least one hundred physically fit male students.

SEC. 3. That the President may, upon the application of any established educational institution in the United States other than a State institution described in section one of this act, the authorities of which agree to establish and maintain a two-years' elective or compulsory course of military training as a minimum for its physically fit male students, which course when entered upon by any student shall, as regards such student, be a prerequisite for graduation, establish and maintain at such institution one or more units of the reserve officers' training corps: *Provided*, That no such unit shall be established or maintained at any such institution at which an officer of the Army is not detailed as professor of military science and tactics, or at any such institution which does not maintain under military instruction at least one hundred physically fit male students.

SEC. 4. That the Secretary of War is hereby authorized to prescribe standard courses of theoretical and practical military training for units of the reserve officers' training corps, and no unit of the senior division shall be organized or maintained at any educational institution, the authorities of which fail or neglect to adopt into their curriculum the prescribed courses of military training for the senior division, or to devote at least an average of five hours per week per academic year to such military training; and no unit of the junior division shall be organized or maintained at any educational institution, the authorities of which fail or neglect to adopt into their curriculum the prescribed courses of military training for the junior division, or to devote at least an average of three hours per week per academic year to such military training.

SEC. 5. That eligibility to membership in the reserve officers' training corps shall be limited to students of institutions in which units of such corps may be established who are citizens of the United States or have legally declared their intention to become such, who are over thirteen years of age, and whose bodily condition indicates that they are physically fit to perform military duty or will be so upon arrival at military age.

SEC. 6. That the President is hereby authorized to detail such numbers of officers of the Army, either active or retired, not above the grade of colonel, as may be necessary, for duty as professors and assistant professors of military science and tactics at institutions where one or more units of the reserve officers' training corps are maintained; but the total number of active officers so detailed at educational institutions shall not exceed three hundred, and no active officer shall be so detailed who has not had five years' commissioned service in the Army. Retired officers shall not be detailed under the provisions of this section without their consent. Retired officers below the grade of lieutenant colonel so detailed shall receive the full pay and allowances of their grade, and retired officers above the grade of major so detailed shall receive the same pay and allowances as a retired major would receive under a like detail. No detail under the provisions of this section shall extend for more than four years.

SEC. 7. That the President is hereby authorized to detail for duty at institutions where one or more units of the reserve officers' training corps are maintained, such number of enlisted men, either active or retired, as he may deem necessary, but the number of active noncommissioned officers so detailed shall not exceed five hundred, and all active noncommissioned officers so detailed shall be additional in their respective grades to those otherwise authorized for the Army. Retired enlisted men shall not be detailed under the provisions of this section without their consent. While so detailed they shall receive active pay and allowances.

SEC. 8. That the Secretary of War, under such regulations as he may prescribe, is hereby authorized to issue to institutions at which one or more units of the reserve officers' training corps are maintained, such public animals, arms, uniforms, equipment, and means of transportation as he may deem necessary, and to forage at the expense of the United States public animals so issued. He shall require from each institution to which property of the United States is issued a bond in the value of the property issued for the care and safe-keeping thereof, and for its return when required.

SEC. 9. That the Secretary of War is hereby authorized to maintain camps for the further practical instruction of the members of the reserve officers' training corps, no such camps to be maintained for a period longer than six weeks, except in time of war or when war is imminent; to transport members of such corps to and from such camps at the expense of the United States so far as appropriations will permit; to subsist them at the expense of the United

States while traveling to and from such camps and while remaining therein so far as appropriations will permit; to use the Regular Army, the continental army, and such Government property as he may deem necessary for the military training of the members of such corps while in attendance at such camps; to prescribe regulations for the government of such corps; and to authorize, in his discretion, the formation of company units thereof into battalion and regimental units.

SEC. 10. That the President alone, under such regulations as he may prescribe, is hereby authorized to appoint as a reserve officer any graduate of the senior division of the reserve officers' training corps or any graduate of the junior division who shall have satisfactorily completed the courses of military training prescribed for the senior division and participated in such practical instruction as the Secretary of War may prescribe subsequent to graduation and who is twenty-one years of age and shall agree, under oath in writing, to serve the United States in the capacity of a reserve officer of the Army during a period of at least ten years from the date of his appointment as such reserve officer, unless sooner discharged by proper authority, but the total number of reserve officers so appointed shall not exceed fifty thousand: *And provided*, That any graduate of the senior division of the reserve officers' training corps undergoing a postgraduate course at any institution shall not be eligible for appointment as a reserve officer while undergoing such postgraduate course, but his ultimate eligibility upon completion of such postgraduate course for such appointment shall not be affected because of his having undergone such postgraduate course.

SEC. 11. That when any member of the senior division of the reserve officers' training corps has completed two academic years of service in that division, and has been selected for further training by the president of the institution and by its professor of military science and tactics, and has agreed in writing to continue in the reserve officers' training corps for the remainder of his course in the institution, including such camp training as shall be prescribed by the Secretary of War, he may be furnished, at the expense of the United States, with commutation of subsistence at such rate, not exceeding the cost of the garrison ration prescribed for the Army, as may be fixed by the Secretary of War, during the remainder of his service in the reserve officers' training corps.

SEC. 12. That any physically fit male citizen of the United States between the ages of twenty-one and twenty-seven years who shall have graduated prior to the date of this act from any educational institution at which an officer of the Army was detailed as professor of military science and tactics and who while a student at such institution completed courses of military training under the direction of such professor of military science and tactics substantially equivalent to those prescribed pursuant to this act for the senior division shall, after satisfactorily completing such additional practical military training as the Secretary of War shall prescribe, be eligible for appointment as a reserve officer and as a temporary additional second lieutenant in accordance with the terms of this act.

SEC. 13. That the President alone is hereby authorized to appoint and commission as a temporary second lieutenant of the Regular Army for a period of at least six months with the allowances now provided by law for that grade, but with pay at the rate of \$100 per month, any reserve officer appointed pursuant to this act and to attach him to a unit of the Regular Army for duty and training during the period covered by his appointment as such temporary second lieutenant, and upon the expiration of such service with the Regular Army such officer shall revert to his status as a reserve officer.

SEC. 14. That no reserve officer or temporary second lieutenant appointed pursuant to this act shall be entitled to retirement or to retired pay and shall be eligible for pension only for disability incurred in line of duty in active service or while serving with the Regular Army pursuant to the provisions of this act.

SEC. 15. That in time of war the President may order reserve officers appointed under the provisions of this act to active duty with any of the military forces of the United States in any grades not below that of second lieutenant, and while on active duty they shall be subject to the Rules and Articles of War.

SEC. 16. All laws or parts of laws in conflict with the provisions of this act are hereby repealed.

STATISTICAL COMPARISON OF UNIVERSAL AND VOLUNTARY MILITARY SERVICE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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STATISTICAL COMPARISON OF UNIVERSAL AND VOLUNTARY MILITARY SERVICE.

The leading European powers, and Japan, are organized for industrial competition in peace and for full preparedness against war. England and the United States are not so organized.

The principal "tool" used by the European nations and by Japan in such organization, has been universal military service, an institution extending back into the last century, adopted and made compulsory by vote of their peoples; and with time so adjusted, developed, and corrected as to coordinate with the industrial, commercial, and financial life of the nation, and make the transition from peace to war conditions least disturbing to the nation.

By means of this tool, we find, early in 1914, that the war man power of the universal service nations is limited by their respective financial conditions, by the material which is disposable for war, and by the numbers of able-bodied male citizens who can be taken from those interior industries and vocations that are essential to the continuance of the national life and to the prosecution of war; and we find further that some of those nations can place in the field one-tenth of their total population, organized, armed, and equipped, trained and physically fit for actual fighting.

On the other hand we find, at this time, the two English-speaking nations whose geographical situation, populations, and resources place them in the front rank of world powers, pursuing parallel policies in avoiding any semblance of military strength on land, seeking rather to confine their preparedness to power on the sea; and hoping when attacked to find defense on land through volunteers, supplemented in great stress by conscripts.

The world military situation existing to-day and created by universal service, by which the principal European nations and Japan are able to place the trained masses of their peoples in the fighting fronts, is ominous, and it makes pertinent a comparison of the universal and voluntary service systems. With the object of giving a concise statistical view of the situation, the accompanying tables have been prepared, based upon data found in the "Statesman's Year Book, 1915," most of the items pertaining to conditions existing prior to the present European war.

ANALYSIS OF TABLE I.

While some of the universal service nations hold their young men to *liability* for service prior to the age of 20 years, and their older men after the age of 38 years, they do not, as a rule, enroll men *for training* before the twentieth nor after the thirty-eighth year. This may be explained by the fact of many immature youths of less than 20, and to marked depreciation in fitness after 38.

Generally, therefore, we find that training, and actual service as soldiers, begins at the age of 20 and extends through three periods of relative fitness, with average about as follows:

(a) A first line period, consisting of two or three years of intensive training, followed by seven or eight years of first reserve service, the latter with some training. During this period, physical fitness is considered at the maximum, i. e., from 20 to 30 years.

(b) A second line period, consisting of about 10 years of second reserve service, with short periods of supplementary training, generally at maneuvers.

(c) A home defense or auxiliary service period, generally without any training, for men between 40 and 45 years.

Included in this table will be found corresponding figures pertaining to Australia and Switzerland, States which have adopted limited compulsory service for home defense only, the results of which have not been tested by war. It must be admitted that the systems of these two States are of doubtful utility to a world power facing the question of adequate preparedness in all its phases.

ANALYSIS OF TABLE II.

That the figures in this table may be understood, it must be borne in mind that not only do financial, industrial, and economic conditions, varying in the different nations, seriously affect the cost of military efficiency, but also that in some nations utilities owned by the Government are made use of in military training without corresponding charge against the military budget.

It must be evident that under equal financial and industrial conditions, mobilization for training will cost more in an extensive country like Russia than in a compact country like Italy or Japan.

And, further, it is admitted that a comparative analysis may be misleading, but not vitally so, for the reason that we can not ascertain what proportion of the budgets is expended for training proper and what proportion is spent for armament, munitions, and other utilities necessary for the prevention or the prosecution of war.

With reference to man power, it appears that the total number of males of military age in a nation fit for service is about one-sixth of the total population. All, however, are not equally fit for service

in the fighting line, and a large proportion could be used only for service of the interior. In addition many exemptions must be made, owing to the inadvisability of withdrawing men from those industries and vocations that are essential to the life of the nation, and that proceed in many cases with acceleration during war.

For these and other reasons the proportion of one-sixth that are fit for service dwindles to about one-tenth, and this is the proportion that experience shows as representing the maximum man power which any nation, however farsighted or methodical its statesmen, has been able to place in the fighting fronts or actual operations at the outbreak of war.

In attempting to prepare a trustworthy comparative estimate of the actual man power of the principal nations in terms of men fully trained, organized, armed, equipped, and fit for actual fighting it has been found that most nations hold secret much of the information required. Therefore estimates must rest upon a comparison of various factors that are known, the principal ones being as follows:

(a) The extent and effectiveness of the peace training system and the length of time the system has been in operation:

In a nation where a thorough system of universal training has been long established, where the extent and effectiveness of training is properly coordinated with financial conditions, and where the training system has through experience been so corrected and adjusted that it minimizes interference with, while taking full advantage of, industrial, educational, and other features essential to the national life, we are justified in the conclusion that a full maximum of man power can be developed.

On the other hand, a nation that stints or maladministers its training system, or that has not long applied such a system, must suffer a material reduction in a comparative statement of its trained man power.

(b) Limitations of organization, armament, equipment, and mobilization. These essentials to preparedness can not, like mushrooms, spring up during the night. A nation with an available man power of ten millions, but which limits the total of its organizations ready for war to but one-half of that number, must be estimated as having but five millions of man power.

Similarly, reductions must be made to correspond to what a nation actually has in armament, munitions, and equipment.

And if details of mobilization are not worked out by peace practice, defective results will be expected in the placing of men and materials at the fighting fronts at the outbreak of war. There will then be a corresponding decrease in the effective man power.

(c) Proportionate exemption of those that are unfit, unworthy, or of those that are fit, but can not be spared from the industries or

vocations essential to national life and to the prosecution of war. And to this must be added the elimination of those no longer fit for actual fighting. These exemptions and eliminations, with a nation aiming at the development of its maximum man power, result in a man power of not more than one-tenth of the total population. If the essential conditions are not fully organized, a further reduction of man power will result.

(d) Relative financial and economic conditions of nations.

The development of effective man power for war is inseparably connected with these features. Where these features are defective, or where the peace training system does not interweave therewith, there will result strains and limitations, with corresponding reductions of man power.

(e) Psychological fitness of the people of a nation for war.

A nation which for generations has directed all its energies to commercialism will be found peopled with those whose mental attributes unfit them for effective collective action in war; and such a nation can not for a considerable period develop for war an effective peace-trained man power. On the other hand, a nation that has directed its energies toward military efficiency will be found with people mentally equipped for and capable of united action in war; and such a nation develops readily a full man power by its peace training.

It will be noted that the yearly cost per effective of man power is very much less in those nations that have universal service. This is but the natural result of the policy pursued. The English-speaking nations go into the labor market in wage competition for their professional soldiers. On the other hand, the nations with universal service coordinate their training with industrial and financial conditions; and pay their men under training a nominal sum, sufficient only for their minor wants and for the contentment of the average man.

GENERAL COMMENTS.

Broadly speaking, universal service, being maintained by a tax upon manhood as well as upon wealth, it distributes more reasonably the effort of government; supplementing the universal system of education, which it rounds out, it broadens and educates the youth of the nation individually and in duty to the State, offsetting the harmful influences of crowded modern conditions of life, it improves and builds up the physical characteristics of the people of a nation; and finally, when coordinated with other essential features of national life—and it is inseparably connected with them—it improves every condition thereof, and harmoniously secures the

maximum of military preparedness now so essential to the very existence of the modern nation in peace as well as in war.

Although not included in the tables herewith, it is pertinent in connection with thought of Pan Americanism, which must now be recognized as a great fact, to state that Argentina, Chile, and Brazil, which may be considered as the leading nations of South America, have all adopted compulsory military service.

Each of these nations has been divided into military districts for peace training and for war, and each expends annually an average of 10 per cent of its total budget, at an average cost of \$1 per inhabitant, for military preparedness.

It is evident that a nation first adopting universal service to secure military efficiency will not begin at once to reap its benefits. Several years' trial, with corresponding years of adjustments and corrections to meet conditions, are necessary, if a nation would secure the full benefits arising from a well-devised, well-maintained program of universal service.

TABLE I.—*Universal service—Liability and enrollment.*

Nation.	Liability.		Actual enrollment for service.							
	Ages from, to—	Total years of.	Service begins (age).	First period.		Second period.		Third period.		Total years enrolled.
				Years en-rolled.	Years train- ing.	Years en-rolled.	Months training.	Years en-rolled.	Months training.	
Universal-service nations:										
Austria-Hungary.....	19-42	24	21	12	2½	9				21
France.....	20-48	29	20	14	3½	7	½	7		28
Germany.....	17-45	29	20	7	2½	12	1			25
Italy.....	20-38	19	20	8	2	4				19
Japan.....	17-40	24	20	7½	2½	10	4	½		20
Russia.....	20-43	24	20	18	3½	5				23
Limited compulsory-service nations:										
Australia.....	19-26	8	19	8	½					8
Switzerland.....	17-48	32	20	12	1½	8	½	8		28
Voluntary-service nations:										
United Kingdom.....	18-45	28								
United States.....	18-45	28								

STRATEGIC LOCATION OF MILITARY DEPOTS, ARSENALS, AND MANUFACTURING PLANTS IN THE UNITED STATES

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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STRATEGIC LOCATION OF MILITARY DEPOTS, ARSENALS, AND MANUFACTURING PLANTS IN THE UNITED STATES.

1. Paragraph 60 of the Statement of a Proper Military Policy for the United States, prepared by the War College Division, General Staff Corps, in compliance with instructions of the Secretary of War and submitted September 11, 1915, is as follows:

60. As a general military principle, no supply depot, arsenal, nor manufacturing plant of any considerable size, supported by War Department appropriations for military purposes, should be established or maintained east of the Appalachian Mountains, west of the Cascade or Sierra Nevada Mountains, nor within 200 miles of our Canadian or Mexican borders, and steps should be taken gradually to cause to be moved depots and manufacturing plants already established in violation of this military principle.

2. The soundness of the general principle of establishing permanent Government arsenals and supply depots at a safe distance from national frontiers seems so clear that no lengthy discussion or explanation of paragraph 60, just quoted, seems necessary. It may be of service, however, to illustrate graphically the trouble liable to arise from violation of this cardinal principle.

First, take the case of France in 1870, during the war with Germany, and note the handicap imposed upon her by the capture of a number of her arsenals, due to their faulty location.

Plate I tells the story at a glance. It shows the positions of the principal arsenals and depots as they existed at the outbreak of hostilities. The shaded portion indicates the territory eventually occupied by the invader. Attention is especially invited to the proximity to the frontier of Douai, La Fere, Metz, Mutzig, Strasbourg, and Besancon. All were captured except the first two, and these were cut off from the French armies.

3. Next take our own case to-day, which is even worse, from a military standpoint, than that of France in 1870. Plate II shows the present locations of the principal Government arsenals and supply depots as they exist to-day in the United States. The shaded portions indicate reasonable and probable objectives for an invader, due to our present state of unpreparedness. Attention is especially invited to the proximity to the frontiers of all our arsenals and supply depots except Rock Island, Omaha, Fort Leavenworth, St. Louis.

and Jeffersonville. Our handicap, if these places were captured, can not be overestimated.

4. Plate III shows the locations of some of our more important privately owned manufactories of war munitions, such as cartridge cases, fuses, shells, explosives, ammunition, binoculars, pistols, wagons, rifles, and bayonets.



PLATE I.

FRANCE IN 1870.

NOTES SHOWING GENERAL CHARACTER OF STORES AT THE PLACES INDICATED.

1. Toulouse: Cannon foundry, artillery forges, powder mills, arsenal, military magazines.
2. Chateauroux: Carriages of the military train.
3. Chatellerault: Manufactory of small arms.
4. Rennes: Arsenal.
5. St. Etienne: Manufactory of small arms.
6. Versailles: Large park of artillery, camp equipment.
7. Lyons: Arsenal.
8. Tulle: Manufactory of small arms.
9. Vernon: Manufactory of the equipages of the military train.
10. Besancon: Foundries, artillery arsenal.
11. Mutzig: Manufactory of small arms.
12. Metz: Arsenal, cannon foundry, powder mills, engineer equipment.
13. Douai: Arsenal, cannon foundry.
14. La Fere: Artillery arsenal.
15. Strasbourg: Artillery arsenal.



PLATE II.

NOTES SHOWING GENERAL CHARACTER OF STORES AT THE PLACES INDICATED.

1. Augusta : Arsenal.
2. Washington : Engineer depot, medical depot.
3. Philadelphia : Quartermaster depot, arsenal.
4. Picatinny : Powder manufactory.
5. New York : Arsenal, signal corps depot, medical depot, quartermaster depot.
6. Springfield : Arsenal.
7. Watervliet : Arsenal.
8. Jeffersonville : Quartermaster depot.
9. St. Louis : Quartermaster depot, medical depot, engineer depot.
10. Chicago : Quartermaster depot.
11. Rock Island : Arsenal.
12. Fort Leavenworth : Engineer depot.
13. Omaha : Signal corps depot.
14. San Antonio : Arsenal.
15. Vancouver Barracks : Engineer depot.
16. San Francisco and vicinity : Arsenal, quartermaster depot, signal corps depot, medical depot.



PLATE III.

The following places are indicated on this plate :

Watertown, N. Y.
 Ilion, N. Y.
 Chicago, Ill.
 Allentown, Pa.
 Giesboro, D. C.
 Worcester, Mass.
 Bridgeport, Conn.
 New Haven, Conn.
 Alton, Ill.
 Lowell, Mass.

Rochester, N. Y.
 Cleveland, Ohio.
 Detroit, Mich.
 Cincinnati, Ohio
 Eddystone, Pa.
 Schenectady, N. Y.
 Richmond, Va.
 Roston, Mass.
 Philadelphia, Pa.
 South Bethlehem, Pa.

Brooklyn, N. Y.
 Pittsburgh, Pa.
 Wilmington, Del.
 Parlin, N. J.
 Pompton Lakes, N. J.
 Lynn, Mass.
 Harrison, N. J.
 Harrisburg, Pa.

SANITARY TROOPS IN FOREIGN ARMIES

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SANITARY TROOPS IN FOREIGN ARMIES.

INTRODUCTION.

DUTIES OF SANITARY TROOPS.

A study of the sanitary troops in foreign armies shows that all the great powers have adopted practically the same principles governing the employment of these troops. The organization and distribution of the various units is to some extent governed by the military conditions affecting the various countries, but it is generally recognized that the duties of sanitary troops are (*a*) the care and treatment of sick and wounded; (*b*) their prompt removal out of the zone of combat; (*c*) the maintenance of the health of troops by the institution of proper sanitary measures; (*d*) the maintenance of an adequate supply of medical and surgical matériel; (*e*) the preparation and preservation of records of sick and wounded.

GENERAL SCHEME OF DISTRIBUTION.

For the proper performance of these duties all countries make a more or less uniform distribution of their medical personnel in (*a*) the zone of advance; (*b*) the zone of the lines of communication; (*c*) the zone of the interior or home territory.

The general scheme of medical service in the zone of advance is to provide a medical detachment for each regiment or similar unit to render service directly to that unit, and to provide mobile medical units for service with divisions, corps, and field armies.

The service on lines of communication is organized so as to provide means for (*a*) evacuation of sick and wounded; (*b*) the replenishing of supplies expended at the front by the mobile field units; (*c*) the transportation of wounded to those points where definite and complete care and treatment can be given them; (*d*) the care of such wounded during transportation.

In the present war extensive use has been made of motor transport to convey wounded from the dressing stations to the rail head, and of hospital trains and hospital ships to convey them to the zone of the interior or home territory. Clearing stations or evacuation hospitals

have been established at the advanced bases for the temporary care of patients until they could be transferred to hospital trains, and large semipermanent hospitals established at the base of the lines of communication for the treatment of all wounded until permanent disposition could be made of them.

Because of the limited territory in each country, the greater part of the wounded have been returned to home territory as quickly as possible. The number necessarily retained on lines of communication, however, has been large. The English Army, after the first six months of war, had established at Boulogne-Sur-Mer, their port of embarkation, 22 hospitals, where an average of some 11,000 patients were daily under treatment. For bringing patients to these hospitals they were employing 12 hospital trains, with an average capacity of 400 patients each. And for transporting to England such patients as it was necessary to invalid home there was a fleet of 14 hospital ships, with an average capacity of 500 patients.

The French Government has maintained on its railways 90 hospital trains, with a carrying capacity of 36,000 patients, and recently recommendations have been made to increase this capacity to 100,000 patients. In accordance with these recommendations 250 hospital trains have now been provided.

In the zone of the interior provision is made for the final disposition of all sick and wounded and the preparation and shipment of all necessary sanitary material. The extent of preparation necessary in this zone can be realized when the extent of casualties is considered. The following shows the number of wounded reported in the present war up to July 1, 1915: France, 700,000; Great Britain, 229,000; Russia, 1,982,000; Germany, 852,000; Austria-Hungary, 711,000; Belgium, 160,000; Serbia, 112,600; Turkey, 40,000; Japan, 910; total, 4,837,510 in one year of war. Of these wounded at least 60 per cent, or approximately 3,000,000 were sent to the hospitals in home territory. Recent reports from France show that she is now maintaining 5,000 territorial hospitals, with a total capacity of 600,000 beds.

For the performance of their medical service, both in peace and war, all armies have maintained a permanent medical personnel, both commissioned and enlisted. In no army, however, has this permanent personnel been sufficient to perform all the duties required of it in the present war.

A study of the war tables of foreign armies shows that an average proportion of 4 officers and 52 enlisted men of the sanitary forces per thousand of total strength are prescribed for duty directly with troops in the zone of advance. The proportion for duty in the other two zones is not prescribed definitely, but a general outline is given of the personnel required for each of the several units. Experience has shown, however, that a slightly smaller proportion is required

for duty on lines of communications than for duty in the zone of advance and a much greater proportion for duty in the zone of the interior.

UTILIZATION OF RESERVE FORCES.

All countries have therefore been obliged to utilize in large measure medical assistance from sources outside of the army. In countries having universal military service nearly every medical man has had a certain amount of military training, and there is, in consequence, a large force of partially trained medical officers available both in the reserves and in volunteer aid societies. In 1913 Germany had 34,136, France 20,809, and Austria 13,734 men so available. These men have been utilized largely on service in hospitals and with units on lines of communication and the zone of the interior and, while there has been some shortage of men for medical service in those countries, practically the whole medical profession was able to render satisfactorily some service.

In England, however, where no appreciable number of reserves were available, the shortage in medical personnel has been keenly felt. Urgent appeals have been made to the entire medical profession in the United Kingdom to give some part of their time to service with the army. A statement by the war office, September 4, 1915, was to the effect that there were at that time in army medical service 5,265 officers, and that there were residing in England, Wales, and Ireland 6,555 medical men of military age not then engaged in war service; and that of these latter one-third were immediately required.

Owing to her inability to secure from her own population a sufficient number of medical men for army service, England has been compelled to draw men from Canada, Australia, and New Zealand and to make request of various medical colleges in this country to send over as many doctors as could be induced to accept commissions. By utilizing to the utmost all available medical material she has been able to secure, approximately, 8,000 men for service as medical officers. Of this number, however, only 1,100 are men trained in medico-military duties.

Because of the great similarity between our military service and that of England this shortage of trained medical officers and the difficulty being experienced in getting even untrained medical officers should be instructive to us.

In all countries considerable reliance has been placed in volunteer aid societies to supplement the permanent personnel. In Austria-Hungary particularly the war plans contemplated association of the Red Cross Society with the medical service even in the zone of advance. The assistance rendered by these societies has been of considerable value in establishments on lines of communication and the

zone of the interior in positions not requiring military training; but they have not been of much value in actual field service nor in administrative positions. For these latter men thoroughly trained in medico-military matters have been found essential.

ORGANIZATION AND ADMINISTRATION ADOPTED BY LEADING POWERS.

The organization, administration, and distribution of sanitary personnel adopted by the leading powers both in peace and in war are shown in the following pages.

I. ENGLAND.

PEACE ESTABLISHMENT.

The military services in England comprise (a) the regular army; (b) the territorial forces; (c) the Indian force; (d) militia forces in various colonies.

REGULAR ARMY.

The *Regular Army* is organized into an expeditionary force, serving in the British Isles, and a colonial force, serving in the various colonies and India. The peace strength of this army is:

British Isles	134, 339
Colonies (other than India)	45, 215
India	75, 884
Total	255, 438

TERRITORIAL FORCE.

The *Territorial Force* corresponds to our militia and is organized into divisions in the same proportion of arms but in smaller numbers than the regular army. It has a strength on paper of 315,408, but probably the actual strength does not exceed 250,000 men.

INDIAN FORCE.

The *Indian Force* is composed of native troops with English officers. It is a distinct service from that part of the regular army which also serves in India. It has a strength of approximately 162,000 men.

COLONIAL FORCES.

All colonies maintain bodies of native troops, officered by Englishmen. Canada, Australia, and New Zealand maintain considerable bodies of militia. Their organization is similar to that of the regular army.

ORGANIZATION OF THE MEDICAL SERVICES.

The medical personnel for the various forces is organized along the same general lines, but there is a distinct medical force for each of the distinct combatant forces.

These various medical forces are (*a*) the Royal Army Medical Corps; (*b*) the Indian Medical Service; (*c*) the Medical Corps of the Territorial Forces; (*d*) the Royal Army Medical Reserve Corps.

ROYAL ARMY MEDICAL CORPS.

This corps comprises both a commissioned and enlisted personnel.

At the head of this corps is the Director General of Medical Services, with rank of lieutenant general. The other officers are 11 major generals, 29 colonels, 130 lieutenant colonels, 331 majors, 418 captains, 128 lieutenants, and 42 quartermasters; total commissioned, 1,090.

In addition to these officers there were on duty before the outbreak of the present war 65 medical officers from the retired list and 182 officers from the reserve corps, making a total in peace of fifty-three one-hundredths of 1 per cent of the total strength of the regular army.

The enlisted personnel is composed of warrant officers, staff sergeants, sergeants, corporals, and privates. It has a total strength of approximately 4,000.

DISTRIBUTION OF PERSONNEL.

Officers of the corps serve both at home and abroad. The enlisted personnel serves only in the military hospitals at home stations. In India the subordinate duties of the medical department are performed by noncommissioned officers and privates belonging to combatant units who volunteer for and are detailed to medical work.

The pay of enlisted men in the Royal Army Medical Corps is slightly higher than for those of similar rank in the line. In addition to their base pay all men below the rank of staff sergeant are also granted "corps pay" (extra duty pay) while on duty. This "corps pay" is further increased by 6d. per day for those men who have taken a course in and been graduated from the "Queen Alexandra's Nursing Service."

THE INDIAN MEDICAL SERVICE.

Medical service for the Indian force is provided by a separate corps of British medical officers with native assistants detailed from the line for subordinate duties. The Indian Medical Corps has 4 major generals, 15 colonels, 147 lieutenant colonels, 227 majors, 318 captains,

and 75 lieutenants; total, 786. Percentage of medical officers to total strength of Indian forces, forty-eight one-hundredths of 1 per cent.

TERRITORIAL FORCE.

The Medical Corps for the Territorial Force is similar to that of the Royal Army Medical Corps. It comprises 14 colonels, 62 lieutenant colonels, 140 majors, 836 captains and lieutenants, 80 quartermasters, and 57 transport officers; total commissioned, 1,189. Proportion to total strength forty-seven one-hundredths of 1 per cent.

DISTRIBUTION OF PERSONNEL.

The Territorial Force is divided into 14 divisions, and the medical service of each division is under the direction of a colonel of the Territorial Medical Corps. The other medical officers for the division are organized into either field ambulance detachments or general hospital detachments.

With each division there are 3 field ambulances, with a staff consisting of 1 lieutenant colonel in command, 2 majors, 6 captains or lieutenants, 1 quartermaster, and 1 transport officer. In addition to the 42 field ambulances assigned to the infantry divisions there are 14 mounted brigade field ambulances, with a staff of 1 lieutenant colonel in command, 1 major, 4 captains or lieutenants, 1 quartermaster, and 1 transport officer.

Twenty-three general hospitals are organized and distributed throughout the divisions. Each general hospital is under the command of 1 lieutenant colonel, with 1 captain and 1 quartermaster as assistants. The medical staff consists of 4 lieutenant colonels, 8 majors, and 2 captains or lieutenants.

In addition to the general hospitals and field ambulances thus provided for there are two sanitary companies and a corps of special sanitary officers numbering 106.

ROYAL ARMY RESERVE CORPS.

There is no definite number of officers in this corps.

WAR ORGANIZATION.

The administrative unit in time of war is the infantry division (19,558 officers and men).

The medical service of the division is under the direction of a Principal Medical Officer (colonel), with 1 captain as assistant and 5 enlisted men as clerks and messengers.

SERVICE WITH COMBATANT UNITS.

In time of war each batallion of infantry, regiment of cavalry, brigade of field artillery, etc., has attached to it 1 medical officer. The enlisted personnel for sanitary duty with these units is not derived from the Royal Army Medical Corps, but from the units themselves. In each unit 30 men are specially trained in sanitary duties: 1 noncommissioned officer and 8 privates are detailed to act as sanitary police; 1 noncommissioned officer and 4 privates are detailed to insure purity of the water supply; 16 privates are detailed as litter bearers; and 1 lance corporal and 1 private are detailed as orderlies to the medical officer. The latter also drives the cart or pack animal carrying medical supplies with which each unit is equipped.

MOBILE MEDICAL UNITS.

In general the medical units prescribed in the British field-service regulations for both the zone of advance and lines of communication are fewer in number and more limited in capacity than those prescribed by other armies. The only mobile units are the field ambulances with the divisions, three of which are assigned to each division. These units are analogous to a combination of ambulance companies and field hospitals in our service.

Each field ambulance is under the command of a major, Royal Army Medical Corps, and is made up of a bearer division and a tent division. The capacity of the tent division is 150 patients, and the entire ambulance is capable of being subdivided into three complete sections.

The personnel of the bearer division comprises 3 medical officers, 6 noncommissioned officers, and 118 privates, Royal Army Medical Corps.

That of the tent division comprises 6 medical officers, 1 warrant officer, 16 noncommissioned officers, and 41 privates, Royal Army Medical Corps.

In addition to this personnel from the Royal Army Medical Corps there are 4 sergeants, 2 artificers, and 48 privates of the army service corps attached. Of the medical personnel, 3 officers may be civilian physicians specially employed, and 90 litter bearers may be recruits specially enlisted.

The total personnel of each field ambulance is 10 officers and 236 men.

Recently a change has been made in the transportation for field ambulances, motor ambulances being largely substituted for horse-drawn vehicles.

The present allowance of transportation consists of 4 carts, 11 wagons, 3 horse-drawn ambulances and 7 motor ambulances, 14 riding horses and 39 draft animals.

MOTOR WORKSHOP SECTION.

Attached to the division for service with the field ambulances is one "workshop" (army service corps). The function of this unit is to keep in repair the motor ambulances. Its personnel consists of 1 officer, 12 artificers, and 8 privates, army service corps, and 7 drivers from the transport troops. Its transportation is 3 motor trucks for stores and 1 motor car for personnel.

The total sanitary personnel provided for each division in war is—commissioned, 52; enlisted, 1,244. Of the enlisted personnel 556 are drawn from the Royal Army Medical Corps, 506 from line organizations, and 182 from the army service corps.

LINES OF COMMUNICATION.

The fixed establishments in the British service are casualty clearing stations, sanitary sections, stationary hospitals, base hospitals, hospital trains and hospital ships, and motor-transport convoys, the latter having been recently introduced.

CASUALTY CLEARING STATIONS.

These stations are located at the head of the lines of communication, and are simply temporary stopping places for wounded until they can be evacuated farther to the rear by hospital trains. No beds or other conveniences are provided, as patients are usually passed through these stations in 24 hours. Their personnel comprises 7 medical officers (4 of whom may be civilian physicians specially engaged), 1 quartermaster, 1 warrant officer, 8 noncommissioned officers, and 69 privates, royal army medical corps. (Of the latter 20 may be specially enlisted.)

Recently motor-ambulance convoys have been organized and used very successfully in bringing the wounded from the dressing stations to the clearing stations. These convoys have a varying number of ambulances and each ambulance has a driver and orderly from the royal army medical corps.

SANITARY SECTION.

A sanitary section includes 1 medical officer, 2 noncommissioned officers, and 25 privates, royal army medical corps. Transportation for this unit is provided from the advanced mechanical transport depot, and consists of 1 motor truck with 2 drivers. Its duties are confined exclusively to sanitary work.

STATIONARY HOSPITALS AND BASE HOSPITALS.

These hospitals are arranged at the base section of the line of communications. At present 22 of these hospitals are established at Boulogne-sur-Mer. Stationary hospitals have a capacity of 200 beds and a staff of 8 officers and 86 men. Royal Army Medical Corps.

General hospitals have a capacity of 500 beds and a staff of 21 officers and 143 men of the Royal Army Medical Corps, supplemented by 43 nursing sisters.

HOSPITAL TRAINS.

As in other armies in the present war, the hospital train is largely utilized in the English service. A number of these trains have been provided, with an average carrying capacity of 396 cases. The medical personnel consists of 2 officers and 45 men, and their equipment includes operating cars, kitchen cars, and every convenience to make them practically rolling hospitals.

HOSPITAL SHIPS.

Because of the necessity of sea transport to return wounded to home territory, England has equipped a number of hospital ships. Details as to the personnel and equipment of these ships are not available.

HOME TERRITORY.

The large military hospital at Netley has been greatly increased in capacity and is the main military hospital in England. Every other available military and civil hospital has been utilized, however, and new pavilion hospitals constructed. Recent reports from the Dardanelles campaign show 112,000 wounded and 78,000 sick in that campaign alone. These men nearly all returned to England. An idea as to the amount of hospital capacity required in home territory may be gained from these figures. As mentioned in the preface of this study, England has made every effort to utilize her entire medical population and has even sought medical assistance abroad.

II. FRANCE.

PEACE ESTABLISHMENT.

The military service in France are—(a) the Metropolitan Army; (b) the Colonial Forces; (c) the Territorial Army.

Service in the Metropolitan Army is compulsory. That in the Colonial Forces by voluntary enlistment. All males between the ages of 18 and 45 are liable to military service. This service is divided

into (a) that with the colors (3 years); (b) that in the Metropolitan Army Reserve (10 years); (c) that in the Territorial Army (5 years); and that (final service) in the Territorial Army Reserve (9 years).

The Metropolitan Army is organized into the Army of the Interior, comprising 19 army corps (472,946 officers and men), and the Algerian-Tunisian Army, comprising four infantry divisions (68,620 officers and men). The colonial forces (49,500 officers and men) are partly French and partly native troops. The portion serving in France forms a colonial army corps of three divisions of infantry and one brigade of artillery.

ORGANIZATION OF THE MEDICAL SERVICES.

The Metropolitan Army and the Colonial Forces have separate medical services. That for the Metropolitan Army is the "Service de sante de l'armee de terre" (army medical service). That for the Colonial Forces is the "Service de sante des troupes coloniales" (colonial military medical service).

SERVICE DE SANTE DE L'ARMIE DE TERRE.

This service comprises—(a) the Corps de Sante Militaire; (b) Officiers d'administration; (c) Sections d'infirmieres.

CORPS DE SANTE MILITAIRE.

(Commissioned medical officers and pharmacists.)

The titles, rank, and number of medical officers and pharmacists in this corps are:

MEDICAL OFFICERS.

Title.	Rank.	Number.
Médecin inspecteur général.....	Lieutenant general.....	5
Médecin inspecteur.....	Major general.....	20
Médecin principal de première classe.....	Colonel.....	50
Médecin principal de deuxième classe.....	Lieutenant colonel.....	95
Médecin major de première classe.....	Major.....	370
Médecin major de deuxième classe.....	Captain.....	580
Médecin aide-major de première classe.....	Lieutenant.....	570
Médecin aide-major de deuxième classe.....	Second lieutenant.....	
Total.....		1,710

PHARMACISTS.

Pharmacien, inspecteur.....	Major general.....	1
Pharmacien, principal, première classe.....	Colonel.....	4
Pharmacien, principal, deuxième classe.....	Lieutenant colonel.....	5
Pharmacien, major, première classe.....	Major.....	30
Pharmacien, major, deuxième classe.....	Captain.....	45
Pharmacien, aide-major, première classe.....	Lieutenant.....	20
Pharmacien, aide-major, deuxième classe.....	Second lieutenant.....	10
Total.....		115

OFFICIERS D'ADMINISTRATION.

These officers form one of the four sections into which the French Quartermaster Corps is divided. Their service is, however, exclusively with the Medical Department, and they are under the command of the senior medical officer of the command with which they are stationed. In addition to administrative duties in the matter of supply, etc., they act as company officers for the sections d'infirmières.

Their titles, rank, and numbers are:

Title.	Rank.	Number.
Officier d'administration, principal.....	Major.....	18
Officier d'administration, première classe.....	Captain.....	175
Officier d'administration, deuxième classe.....	Lieutenant.....	157
Officier d'administration, troisième classe.....	Second lieutenant.....	
Total.....		350

SECTION D'INFIRMIÈRE (HOSPITAL CORPS).

The army hospital corps is organized into 25 sections under regulations as regards discipline and interior economy similar to infantry units. One section is usually assigned to each corps. The strength of each of these sections varies according to requirements and is fixed by the minister of war. They vary in peace from 60 to 800 men.

Recruits are received direct into these sections, or men may be transferred from combatant units. After a period of preliminary drill and instruction they are distributed to the various hospitals in the army corps to which their section is attached for duty as hospital attendants.

SANITARY SOLDIERS BELONGING TO COMBATANT UNITS.

In addition to the soldiers of the sections d'infirmières whose services are confined to military hospitals, there are three classes of men belonging to combatant units, but performing medical service under the medical officers attached to those units. These sanitary soldiers are (*a*) soldat infirmières (hospital attendants), (*b*) soldat brancardiers (litter bearers), (*c*) brancardiers d'ambulance (litter bearers obtained from bandsmen, mechanics, and others), (*d*) médecine auxiliares (doctors or medical students in second year of service; these men hold warrant rank).

In peace two men (soldat infirmières) are detailed from each battalion of infantry, artillery, or engineers, and four from each

regiment of cavalry or artillery for service under the medical officers attached to the organization. Their duties are assisting in caring for the sick of the organization who do not require extensive hospital treatment.

Four men in each company of infantry or engineers and in each battery of field or foot artillery are designated *soldat brancardieres* and are trained while serving with their organization in the work of litter bearers. Their services are not utilized as litter bearers in time of peace (except during maneuvers), but upon mobilization they take up these duties.

Any bandsmen, mechanics, etc., in excess of the number required as litter bearers for the regimental units are also trained in duties of litter bearers. They are designated *brancardiers d'ambulance*, and on mobilization they, together with reservists and unattached men from the sections *d'infirmieres militaire*, form the litter squads for bearer companies.

ADMINISTRATION AND DISTRIBUTION OF PERSONNEL.

Each corps or district has a Principal Medical Officer with rank of major general (or colonel), with one major (*corps de sante*) and two officers *d'administration* as assistants. The duties of these officers comprise not only the general administration and inspection of the medical service of the standing army, but that of the reserves and territorial army also.

A large proportion of the junior medical officers are assigned to regiments and smaller units for service directly with those units.

Other medical officers are distributed to the large military hospitals and to duty with civil hospitals in which army patients are treated.

THE COLONIAL MEDICAL SERVICE.

This service is similar in organization to that for the Metropolitan Army. The commissioned personnel comprises:

MEDICAL OFFICERS.

Title.	Rank.	Number.
Médecin-inspecteur general.....	Lieutenant general....	1
Médecin-inspecteur.....	Major general.....	1
Médecin-principal première classe.....	Colonel.....	12
Médecin-principal deuxième classe.....	Lieutenant colonel....	18
Médecin-major première classe.....	Major.....	88
Médecin-major deuxième classe.....	Captain.....	175
Aide-major, première classe.....	Lieutenant.....	141
Aide-major, deuxième classe.....	Second lieutenant.....	
Total.....		436

PHARMACISTS.

Pharmacien principal, première classe.....	Colonel.....	1
Pharmacien principal, deuxième classe.....	Lieutenant colonel.....	2
Pharmacien major, première classe.....	Major.....	5
Pharmacien major, deuxième classe.....	Captain.....	19
Pharmacien aide-major, première classe.....	Lieutenant.....	19
Pharmacien aide-major, deuxième classe.....	Second lieutenant.....	
Total.....		46

ENLISTED PERSONNEL.

The enlisted personnel comprises 1 section d'infirmières and the personnel supplied by combatant units. Men for the section d'infirmières are enlisted in France and sent to the colonies after a period of instruction in the home depots. The regimental medical personnel is native.

WAR ORGANIZATION.

With the headquarters staff of each field army is a "Medical Inspector General" (lieutenant general) or "Medical Inspector" (major general) with a staff of 1 medical major, 1 supply officer, and 3 cooks.

With each corps is a "Medical Inspector" (major general) or "Principal Medical Officer, first class" (colonel) with a staff of 1 lieutenant, medical corps; 1 supply officer and 4 enlisted men, hospital corps (including 1 cyclist).

With each division headquarters is a "Principal Medical Officer, second class" (lieutenant colonel). His staff consists of 2 privates, hospital corps (1 being a cyclist).

REGIMENTAL SERVICE.

In time of war this service is increased by the incorporation of reserve officers, regimental hospital attendants, and regimental litter bearers from the reserves. The war personnel consists of 7 medical officers (3 from the reserve), 12 attendants, and 92 litter bearers (40 from the band).

MOBILE FIELD UNITS.

The field hospitals formerly forming part of the medical service for each corps have recently been abolished, and wounded are now removed directly from the dressing stations to the evacuation hospitals at the rail head. The mobile medical units attached to each division are now 4 field ambulance sections, 3 sections d'hospitalization, and 1 bearer company.

Those attached to each corps are 1 cavalry ambulance section and 1 corps bearer company.

AMBULANCE SECTIONS.

Ambulance sections establish dressing stations. Each section has a personnel of 6 medical officers, 1 pharmacist, 2 supply officers, 2 noncommissioned officers, and 36 privates, hospital corps, and 1 noncommissioned officer and 9 privates, train troops. Three enlisted men are also provided as officers' orderlies. The transportation consists of 5 riding horses, 14 draft animals, and 6 wagons (1 for personnel and 5 for supplies).

SECTIONS D'HOSPITALIZATION.

These sections furnish additional personnel and supplies to ambulance sections temporarily immobilized. The personnel of each section is 1 medical officer, 3 noncommissioned officers, and 1 private, hospital corps, and 1 noncommissioned officer and 3 privates, train troops. The transportation is 1 riding horse, 6 draft animals, and 3 wagons.

DIVISIONAL BEARER COMPANIES.

These sections work in conjunction with the ambulance sections.

The personnel consists of 6 medical officers (4 of whom are warrant officers from the reserve), 2 supply officers, 1 transport officer, 1 chaplain, 6 noncommissioned officers, and 132 privates, hospital corps; and 4 noncommissioned officers and 58 privates, train troops; total, 10 officers and 194 enlisted men. Transportation comprises 14 riding horses, 59 draft animals, 11 ambulances, 9 wagons, and 1 rolling kitchen.

CAVALRY AMBULANCES.

Personnel: 3 medical officers, 1 supply officer, 1 chaplain, 8 privates, hospital corps; 9 privates, train troops; 4 officers' orderlies.

Transportation: 5 riding horses, 14 draft animals, 2 carts, and 6 ambulances.

CORPS BEARER COMPANIES.

These companies are similar to division bearer companies but are larger. Their personnel comprises 9 medical officers (6 being warrant officers from the reserve), 2 supply officers, 1 transport officer, 1 veterinarian, 4 chaplains, 14 noncommissioned officers, and 205 privates, hospital corps; 5 noncommissioned officers and 73 privates, train troops; and 5 officers' orderlies; total, 17 officers and 298 enlisted men.

Transportation consists of 19 riding horses, 79 draft animals, 11 ambulances and 17 wagons, and 1 rolling kitchen.

LINES OF COMMUNICATION.

The French system of medical service contemplates rapid evacuation of wounded from the zone of combat to the zone of the interior. For this reason temporary hospitals (evacuation hospitals) are established at the head of the lines of communication and wounded evacuated directly from the front into these hospitals.

EVACUATION HOSPITALS.

These hospitals are established at the railhead in the proportion of one to each corps. Their personnel comprises 8 medical officers, 2 pharmacists, 2 quartermasters, 12 noncommissioned officers, and 40 privates, hospital corps. Their equipment consists of 200 litters which are used as beds. Medical and surgical supplies and cookery utensils are secured from the medical advanced supply depot.

AUXILIARY CONVOYS.

When occasion demands all wagons and personnel of the train troops under the commander of the line of communications are, upon request of the principal medical officer, organized into an auxiliary convoy and placed under his direction for use in quickly evacuating the wounded from the field units. These convoys consist of 720 wagons in four sections of 180 wagons each.

MOTOR AMBULANCE SECTIONS.

Recently motor ambulance sections have been organized in the proportion of one to each corps. They are employed in the daily evacuation of the sick from the front to the railhead and in taking up sanitary matériel to replace that expended at the front. These sections are composed of from 18 to 24 motor cars, one of which is a repair car. Recommendation has recently been made that the number of these motor ambulances be increased to 60. The carrying capacity is about 120 patients, 40 recumbent and 80 sitting up.

RESERVE MEDICAL PERSONNEL.

Detachments of reserve medical personnel for the purpose of establishing improvised hospitals are maintained in the proportion of 4 to each corps. These detachments consist of 1 medical officer pharmacist, 1 quartermaster, 1 warrant medical officer, 5 noncommissioned officers, and 39 privates of the hospital corps. Recent recommendations of a committee appointed to investigate the French medical

service include one to the effect that special surgical units similar to the surgical units in the Austrian service be organized in the proportion of one to each corps, their duties being to perform the most serious surgical work.

HOSPITAL TRAINS.

Hospital trains are largely used for carrying patients direct from the zone of advance to the zone of the interior, and in this latter the permanent hospitals are established. Five of these trains were maintained in time of peace. They were prepared by the railway companies who maintain and use them for ordinary traffic. The cars were specially constructed for conversion into hospital cars whenever the order for mobilization is given. The railway companies keep ready all the necessary fittings for the conversion of these cars, while the army medical department keeps ready in its storehouses additional matériel necessary for forming complete rolling hospitals. Two hundred and fifty such hospital trains, with a carrying capacity of 100,000 patients, are at present in use in France.

ZONE OF THE INTERIOR.

France has in time of peace 40 military hospitals with a capacity of 10,192 patients, and there are many large civil hospitals available for military use. In addition to these, however, France has found it necessary to establish 5,000 territorial hospitals with a total bed capacity of 600,000 patients. The personnel of all these permanent hospitals and for most of the work on lines of communication has been obtained from the reserves and from voluntary aid societies.

III. GERMANY.

There are two main divisions of the military service in Germany—(a) regular service; (b) service in the “Landsturm.”

All males between the ages of 17 and 45 are required to perform service in one or the other of these main divisions.

Men selected for the regular service serve 7 years with the standing army (3 with the colors and 4 in the reserve), and are then passed into the “Landwehr,” where they continue service until their thirty-ninth year. Service from the thirty-ninth to the forty-fifth year is in the “Landsturm.”

Men who for any reason are not required to serve in the standing army are placed in the “Ersatz” reserve (special reserve) for 12 years, and then passed to the Landsturm.

Men of good education who clothe and feed themselves during their service are known as “Einjährige Freiwillige” (one-year volunteers),

and are passed into the reserve of the standing army after one year of service with the colors.

The Landsturm is composed of (a) men between the ages of 17 and 20; (b) those between the ages of 39 and 45; (c) men from the Ersatz reserve; and (d) men who are for some reason exempt from regular service.

THE STANDING ARMY.

The standing army, as organized in peace, consists of 25 army corps and 1 cavalry division, besides special troops, schools, etc. (Total strength, budget, 1912, 644,267 officers and men.)

These corps are distributed, 19 in Prussia, 2 in Saxony, 1 in Wurttemberg, and 3 in Bavaria. Each of these independent kingdoms has its own war office and administers its own army, but, combined, they form the army of the German Empire.

GENERAL ORGANIZATION OF THE MEDICAL SERVICE.

The Sanitats Korps.—The army medical department is called the Sanitats Korps and is composed of the following elements: (a) "The Sanitats offizier korps" or corps of medical officers (Prussia, Saxony, and Bavaria each have a separate corps of this character); (b) the "Sanitats offizier diensttuer"; (c) the "Sanitats mannschaft"; (d) the "Militarkranenwarter"; (e) "Krankentrager"; (f) apothecary officials; (g) quartermaster officials; (h) army nursing sisters.

The Sanitats Offizier Korps.—This is a corps of commissioned medical officers. The titles, rank, and number of these officers are:

Title.	Rank.	Number.
General stabsarzt.....	Lieutenant general....	1
General arzt and sanitats inspecteur.....	Major general.....	4
General arzt.....	Colonel.....	25
General ober arzt.....	Lieutenant colonel.....	60
Oberstabsarzt.....	Major.....	494
Stabsarzt.....	Captain.....	640
Assistenarzt.....	Lieutenant.....	1,143
Total.....		2,367

THE SANITÄTS OFFIZIER DIENSTTUER.

This is an auxiliary corps to the corps of permanent medical officers and is a most important element in the German medical service. It is composed of (a) medical men who are doing their service with the colors as one-year volunteers and who are appointed to junior positions in the medical corps (Oberarzt or Assistenarzt) and (b) medical students who have practically completed their medical studies and are doing their regular military service. These latter serve with the medical corps as warrant officers (Unterarzte).

The presence of these men in subordinate positions permits the maintenance of a permanent commissioned medical personnel very much smaller than would otherwise be required and provides a large supply of reserve medical officers for war.

THE SANITÄTS MANNSCHAFT.

The Sanitäts Mannschaft is recruited entirely from men in the combatant units of all arms who have completed one year of service with their unit. They may be either men who have volunteered for service in the medical corps or men who have been transferred to that corps by command. After being transferred these men are sent for a six months' tour of instruction to the largest garrison hospital in the district where they are serving. While serving at these hospitals they are given a graded course of instruction in all the duties of sanitary soldiers. Upon completion of the course each man is examined and if found proficient is returned to his original organization for duty with the medical service thereof. Noncommissioned officers of the Sanitäts Mannschaft are not all returned to their units but many continue their service in various military hospitals.

The various ranks in the Sanitäts Mannschaft are: Sanitäts Feldwebel (sergeant major), Sanitäts Vize Feldwebel (quartermaster sergeant), Sanitäts Sergeant (sergeant), Sanitäts Unteroffizier (corporal), Sanitäts Gefreiter (lance corporal), Sanitäts Soldat (private).

THE MILITÄR KRANKENWÄRTER.

These men are enlisted directly into the medical corps and perform the whole of their service with the colors as hospital attendants in the larger military hospitals. The number of men in this class is determined by the hospital requirements of each army corps according to estimates prepared yearly by the principal medical officer thereof.

THE KRANKENTRÄGER (LITTER BEARERS).

Litter bearers for the army are not incorporated into the army medical service. Every combatant unit trains a certain number of its personnel in the duties of litter bearers. Each company of infantry, cavalry, foot artillery, and engineers trains annually four men, and each machine-gun battery and field artillery battery trains annually two men in these duties. Upon mobilization men so trained are assigned exclusively to bearer duty with their organizations, and men so trained who have passed into the reserve are, upon mobilization, assigned to duty with bearer companies in the medical battalion.

APOTHECARIES AND QUARTERMASTERS.

The duties required of apothecaries and quartermasters are performed by men belonging to the class known as military officials. They are not commissioned officers, although those in the higher grades have military titles.

ADMINISTRATION AND DISTRIBUTION OF PERSONNEL.

The general administration of the medical department is under the Director General of Medical Services, with rank of Lieutenant General and stationed in the war office in Berlin. His personal staff consists of 1 colonel, 3 majors, and 3 captains, medical corps. Directly under him are 4 "General Ärzte und Sanitäts Inspecteurs," with rank of major general. One of these officers is assigned to duty with each of the four military districts into which the Prussian Army is divided. Their duties are the general inspection of medical and sanitary matters in their districts. Each has one captain, medical corps, as assistant.

At each army corps headquarters is a "Korps Arzt," with rank of colonel. He is in charge of all medical matters pertaining not only to the active army but also to the reserve, Landwehr, Landsturm, and voluntary aid societies within his corps. His assistants are 1 captain, 1 apothecary, and 2 clerks, medical corps.

Each division has a "Division Arzt," with rank of lieutenant colonel as principal medical officer of the division.

Medical officers are distributed in each corps for duty with troops or at garrison hospitals. Forty-five medical officers are on duty as professors and instructors in the army medical school in Berlin.

Medical service is provided in regimental infirmaries and garrison hospitals. A garrison hospital is established in all garrisons having a strength of 600 or more men.

Each combatant unit has a fixed medical personnel. A major, medical corps, is attached to the staff of each regiment and a captain, medical corps, to each battalion. In addition to the regular officers there are also attached a number of subaltern officers from the Diensttner. In many garrisons a retired medical officer is on duty as garrison surgeon for attendance on officers' families and officials not belonging to combatant units.

The enlisted medical personnel comprises one noncommissioned officer and one private of the Sanitätsmannschaft with each company and the litter bearers mentioned above.

The junior medical officers for duty with garrison hospitals are derived from those detailed for such service from the regiment to which they are attached. Such details are for a period of one year.

The enlisted personnel for hospitals is derived from members of the Sanitätsmannschaft and from Militär Krankenwarter.

WAR ORGANIZATION.

The general direction of the medical services in time of war is under a "Chef des Feld—Sanitäts wesens," with rank of lieutenant general, who belongs to the staff of the Imperial Headquarters.

On the headquarters staff of each field army is the "Armee-arzt" with rank of major general. His personal staff consists of two Oberarzt and one Stabsarzt. On the staff of each army corps commander is a "Korpsarzt" (colonel), with two assistants (one as major and sanitary officer).

In addition to the regular medical officers at army corps headquarters there is one "consulting surgeon" with the rank of colonel, lieutenant colonel, or major. This consulting surgeon is appointed by the Emperor, on the recommendation of the Director General of Medical Services, from amongst civil surgeons of eminence.

On the staff of each division commander is the "Division arzt" (lieutenant colonel), with one assistant.

The Director of the Medical Services on lines of communication is an important position in the German service. There is one such official to each field army, and he is known as the "Etappenarzt," with rank of colonel. Under his direction are the "Krieglazaretten directoren" (directors of hospitals), one to each corps of which the field army is composed, and a "consulting sanitary officer," appointed from among eminent civilian physicians in the same manner as the consulting surgeon is appointed at corps headquarters.

MEDICAL PERSONNEL WITH COMBATANT ORGANIZATIONS.

There are 2 medical officers, 4 men from the Sanitätsmannschaft, and 16 litter bearers with each battalion of infantry or similar units. The litter bears, while belonging to the combatant units, are carried on the rolls of their organizations as noncombatants and therefore wear the Red Cross crosses. They are, to all intents and purposes, a part of the medical organization.

SANITÄTS BATAILLON.

One "sanitäts bataillon" is attached to each corps. This unit is analogous to the sanitary train in our service and comprises 3 bearer companies and 12 field hospitals. It is commanded by a major of the line, with an adjutant and a detachment of enlisted men, also from the line. The commanding officer of the battalion directs its movement and the movement of the units of which it is

composed. He does not, however, control the administration of the field hospitals belonging to the battalion; these being under the direction of the senior medical officer.

Similarly, too, a divided authority exists in the bearer companies. These organizations are commanded by line officers and their enlisted personnel is obtained from reserve soldiers of the line, but accompanying each bearer company is a dressing-station section composed of eight medical officers who, while nominally attached to the bearer companies, are not under the authority of its commander. They are, however, dependent upon him for the enlisted personnel necessary to assist in the work of the dressing station. This divided authority in the German field medical units somewhat impairs their efficiency and has proven a frequent source of friction.

The personnel of each bearer company is 4 officers, 36 noncommissioned officers, and 208 privates from the line; 4 noncommissioned officers and 28 privates from train troops; and 1 officer, 9 noncommissioned officers, and 8 privates from the medical corps, composing the bearer company proper; and 8 medical officers composing the dressing-station section. Total, 13 officers, 49 noncommissioned officers, and 244 privates.

The transportation consists of 21 riding horses, 26 draft animals, 8 ambulances, and 5 wagons.

FIELD HOSPITALS.

The general direction of field hospitals is under the *Korps Arzt*, who controls their disposition by orders issued through the corps commander. Each field hospital has a capacity of 200 patients and is capable of expansion. Its personnel comprises 6 medical officers, 1 apothecary, 2 quartermasters, 11 noncommissioned officers, and 17 privates, medical corps; and 2 noncommissioned officers and 19 privates, train troops. Total, 6 officers, 3 officials, 13 noncommissioned officers, and 36 privates.

The transportation consists of 9 riding horses, 18 draft animals, 1 ambulance, and 8 wagons.

LINE OF COMMUNICATION.

The service at the head of a line of communication is slightly different from that in other armies. For the care of wounded two distinct units are organized in the proportion of 1 of each to each corps. These units are a "war hospital detachment" and a "wounded transport detachment." These two units combined perform the work of the evacuation hospitals in our service, but they are more mobile and operate independently.

The function of the war hospital detachments is to take over from the field hospitals such wounded as can not bear further transportation. In other words, they become immobilized field hospitals.

Their personnel consists of 19 medical officers, 1 dentist, 3 apothecaries, and 6 quartermaster officials, 3 clerks, 3 cooks, 27 noncommissioned officers, and 36 privates, medical corps; and 26 privates of train troop. Total, 19 officers, 10 officials, and 95 enlisted men.

These units have no authorized equipment, but obtain it from the field hospitals they relieve (which in turn are replenished from the advanced medical-supply depot) or from local resources.

The wounded transport detachment also has no fixed equipment, but obtains it as needed from local sources or from the medical-supply depot. Its personnel comprises 7 medical officers, 6 noncommissioned officers, and 6 privates, medical corps; and 8 privates from train troops.

The duties of these detachments are to establish dressing and refreshment stations at the railhead or other points where large numbers of wounded are being brought for disposition. At the dressing or collecting station the wounded are classified, and those able to bear transportation are turned over to the hospital trains. Those not able to bear railroad transportation are sent to the nearest hospital. For this latter purpose all available transportation in the vicinity, including army transportation, is utilized by these detachments.

Both the war hospital detachments and the wounded transport detachments are under the direction of the Etappenarzt and form freely movable units of personnel, which can be utilized to establish hospitals and collecting stations at the most convenient places.

Like the other European nations, Germany has largely employed motor ambulances for evacuating wounded from the front. No details of the organization of this service are available.

Outside of the zone of advance Germany makes free use of her civilian population and voluntary aid societies. At frequent intervals along the line she establishes base hospitals. The command of these hospitals is always given to a regular medical officer of the active or retired list, but the routine hospital work is done by local civil practitioners.

If no regular medical officer is available to command such a hospital, the control is placed under a "hospital committee" consisting of a line officer and a civil surgeon. A similar arrangement is in effect in the home territory, where each garrison hospital is supplemented and used as a "reserve hospital" (general hospital). Eminent physicians and surgeons from civil life are employed in these hospitals.

HOSPITAL TRAINS.

Germany has in service 150 regularly equipped hospital trains. The capacity of these trains is about 250 patients each, and they are complete rolling hospitals with a fixed medical personnel.

In addition to these hospital trains she uses ambulance trains consisting of cars returning from the front and temporarily equipped for patients by supplies kept for that purpose at the advanced supply depots. These trains have no fixed personnel, but as a rule are provided with two medical officers, two noncommissioned officers, and 12 attendants for each 100 patients. Ordinary passenger coaches are also utilized for carrying wounded not requiring more elaborate transportation. Medical officers do not accompany these trains, but they supervise the loading and unloading. Attendance en route is furnished by voluntary aid societies.

HOME TERRITORY.

All garrison hospitals in time of war become "reserve hospitals" (general hospitals). The capacity of these hospitals is increased by erecting additional buildings and by utilizing other buildings as branch hospitals. Regular army medical officers are always in command of these hospitals, but civil surgeons are largely utilized for the personnel.

As with other European nations the greater part of Germany's wounded are promptly transported to well-equipped hospitals in home territory.

IV. AUSTRIA-HUNGARY.

The military service of the Austro-Hungarian Empire is divided into—(a) the Landwehr, or national army of Austria; (b) the Honved, or national army of Hungary; (c) the Gemeinsames Heer, or common army of both countries; (d) the Landsturm, or second reserve of Austria and Hungary.

All males between the ages of 19 and 42 are liable to military service, and it is decided by lot whether such service will be in a national army or in the common army. Actual service begins at the age of 21 and lasts for 12 years.

Men drawing assignment to the common army serve three years with the colors and seven years in the reserve of that army. They then serve an additional two years in the reserve of a national army, and at the expiration of this service pass to the Landsturm, where they are available to call until they reach the age of 45.

Men drawing assignment to a national army serve two years with the colors of that army and ten years in its reserve. They then pass to the Landsturm.

Men not required to keep up the standing armies to required strength are given eight weeks' training and then passed into the Ersatz reserve.

All men between the ages of 19 and 21 and those men who have completed service in one or the other of the armies form until their forty-second year the Landsturm or second reserve.

The peace strength of the three armies is:

Officers and men:

Common army	370, 725
Austrian Army	55, 195
Hungarian Army	42, 800
Total	468, 720

ORGANIZATION OF THE MEDICAL SERVICE.

The medical service is composed of the following elements:
 (a) The Militär arzliches Offiziers Korp (medical officers' corps);
 (b) the Sanitäts truppe (hospital corps, officers and men); (c) the "Sanitäts hilfpersonnel bei den truppen" (men belonging to combatant units but employed in the medical service with those units);
 (d) medicamenten beamte (medical officials, pharmacists, and supply officers); (e) nursing sisters; (f) voluntary aid personnel.

THE MILITAR ARZLICHES OFFICERS' KORP.

Each army has a separate corps of commissioned medical officers. The titles, rank, and numbers in these corps are:

	Rank.	Number.			
		Common Army.	Land-wehr.	Honved.	Total.
Generaloberstabsarzt.....	Lieutenant General...	1			1
Generalstabsarzt.....	Major General.....	8	1	1	10
Oberstabsarzt, first klasse.....	Colonel.....	50	6	8	64
Oberstabsarzt, second klasse.....	Lieutenant colonel.....	75	15	10	100
Stabsarzt.....	Major.....	154	19	22	195
Regimentsarzt.....	Captain.....	711	152	122	985
Oberarzt.....	Lieutenant.....	229	10	15	254
Total.....		1, 228	203	178	1, 609

THE SANITATS TRUPPE.

This corps, while organized as a distinct corps, is in fact a subordinate part of the medical officers' corps, being somewhat similar to the Hospital Corps in our service. The officers are not medical men and have no medical training. They are line officers and are commissioned directly into the corps in the same way that officers

are commissioned into the combatant branches of the army. They may subsequently exchange with officers of combatant units, and officers of combatant units may exchange with officers of this corps, especially if they are unfit, for medical reasons, for combatant duties.

The officers of this corps are in direct command of the detachments of enlisted personnel and have the relative position of company officers. Their duties consist in regulating the discipline and internal economy of the detachment and training its members in military duties. They are, however, under the command of the senior medical officer of the hospital to which they are attached. In other words, the senior medical officer of the hospital commands the whole unit, including all personnel, medical or otherwise, who are on duty with it, and all officers and men who are patients in it; while the sanitats truppe detachment commander commands the detachment only.

The enlisted personnel consists of warrant officers, noncommissioned officers and privates. They are recruited directly into the corps on the levying of each annual contingent and are organized into companies or detachments, one for each garrison hospital. There are 27 of these detachments, varying in strength according to the size and importance of the garrison hospital to which assigned. The largest detachment consists of 5 officers and 270 men, and the smallest of 3 officers and 58 men. The total peace strength of the corps is 85 officers and 3,062 men.

The duties of these detachments are those of the subordinate personnel of military hospitals, e. g., ward masters, nursing, cooking, and general duties. None of the officers and men of the "sanitats truppe" do duty with combatant units, but in the event of war they are distributed among the field sanitary units.

SANITATS HILFSPERSONAL BEI DEN TRUPPEN.

This division of the medical service consists of noncommissioned officers and men who belong to combatant units and who wear the uniform of their organizations. They are, however, permanently under the command of medical officers and perform only medical duties.

They are of three classes: (a) Medical assistants (Sanitats unter offizieres); (b) litter bearers (Blassierten trager); (c) carriers, for medical and surgical equipment (Bandagentrager).

Medical assistants are noncommissioned officers and number, in peace, 1 per battalion, and, in time of war, 1 per company, or similar unit. They perform the duties of ward masters in regimental hospitals.

Litter bearers (4 to each company) are trained in time of peace as such, and in addition perform all the medical duties which, in garrison hospitals, are performed by men in the sanitats truppe.

Carriers of equipment (2 to each battalion or similar unit).—These men have general charge of the regimental medical equipment and carry it when on the march.

PHARMACISTS AND SUPPLY OFFICIALS.

These men form a special branch of the medical service, both in the common army and the Hungarian Army. They have charge of all the medical and surgical stores in time of peace, and are assisted by a small technical personnel as well as by men of the medical corps.

The number of pharmacist officials in time of peace is 108, with relative rank varying from lieutenant colonel to second lieutenant.

NURSING SISTERS.

There is no corps of female nurses provided in peace, but sisters of the order of St. Vincent de Paul are employed in the larger garrison hospitals, while in officers' wards lay nurses may be employed as required.

ADMINISTRATION AND DISTRIBUTION OF PERSONNEL.

All general administration of the medical service in the common army is performed in the war office in Vienna by the fourteenth division of that office. This division is under the direction of a chief (lieutenant general or major general, medical officers' corps) with 9 medical officers, 1 supply officer, and 1 pharmacist as assistants. In connection with this bureau are two auxiliary bureaus, one under the direction of a colonel of the line, for the administration of the affairs of the "sanitats truppe," and one under the direction of the senior medical officer, for administration of the medical officers' corps. The Landwehr and Honved each have separate administrative officers. That for the landwehr is under the direction of a major general, medical officers' corps, at Vienna, and that for the Honved is in charge of a similar officer at Budapest. Both, however, are subordinate to the kriegs ministerium.

Each army corps has an administrative medical officer called the "Sanitats chef." His rank is either that of major general or colonel. (There are no brigadier generals in the Austro-Hungarian Army.) He has permanently one major and several captains as assistants. In each division a lieutenant colonel, usually the commanding officer of the garrison hospital, is appointed to carry on the administrative medical duties within the division. Each Austrian and Hungarian

territorial command has a colonel or lieutenant colonel as Chief Surgeon (Sanitats Chef).

The remaining officers of the medical officers' corps are distributed among the various garrison hospitals and other establishments or are attached to regiments for regimental medical duties. As a rule junior medical officers serve one or two years in a garrison hospital and then are assigned to regimental duty, where they remain until they reach the rank of major, when they are returned to duty in garrison hospitals in charge of the various departments in those hospitals. There are no specialist sanitary officers as there are in the British and German Armies. All sanitary services are carried out regimentally under the supervision of the regimental surgeon.

The sick are cared for in regimental infirmaries, regimental hospitals, and garrison hospitals. At the regimental infirmary dispensary treatment only is given. *Regimental hospitals* correspond to post hospitals and their personnel is supplied from the regiment.

Garrison hospitals are, in effect, large general hospitals. Their personnel is supplied by the medical officers' corps, and the sanitats truppe. There are 27 of these hospitals for the "common army." The Landwehr possesses no garrison hospitals, but there is one for the Honved in Budapest.

Garrison hospitals not only care for the sick but serve as training schools for one-year volunteer medical students and the men of the sanitats truppe. In addition, they maintain a reserve store of medical and surgical supplies and act as mobilization centers for the field medical units. Each garrison hospital is commanded by a medical officer with rank of colonel or lieutenant colonel, with a large staff of medical officers. In addition, there is also 1 supply officer, 1 paymaster, 1 pharmacist, and a detachment of the sanitats truppe.

WAR ORGANIZATIONS.

The Austro-Hungarian Army in war time is not divided into three forces as in peace, but forms one army composed of all three elements. The administrative unit is the field army, consisting of from two to four corps, and these in turn of usually three divisions. Two of these divisions are drawn from the common army, and the third from the Landwehr or Honved, or from the reserves of the first line.

In the field each Headquarters Staff of each field army, corps, division, and independent brigade has attached to it a Chief Medical Officer with one or more assistants. These officers are administrative officers for the medical service of their respective commands and receive their orders and instructions from the general officer commanding either direct or through his chief of staff. They are em-

powered to issue orders direct to the medical units of their command; but orders directing a change of position on the march or in combat must be concurred in by the chief of staff.

The Chief Medical Officer of a field army is the "Armee-Chef-Arzt," with rank of major general. He has one regiments-arzt as assistant. There is an administrative medical officer also on the staff of the general commanding the lines of communication. His official title is "Sanitats Chef beim armee etappen-kommands." He has a staff of assistants consisting of 1 regiments-arzt, and 4 delegates, 4 assistant delegates, and 1 clerk from the Red Cross Society. (In the Austro-Hungarian Army, volunteer aid is intimately associated with the army medical service.)

Each army corps has a Korps-Chef-Arzt with rank of colonel. He has a regiments-arzt as assistant, and a delegate from the Red Cross Society is also with him in the field.

The chief medical officer of the division is the "Division-Chef-Arzt" with rank of major. He has no commissioned assistant, but four mounted orderlies are assigned to him for duty.

MEDICAL SERVICE IN THE ZONE OF ADVANCE.

Medical service in the zone of advance is performed by the regimental medical service, the divisional medical unit and such other medical units, e. g., field hospitals, field depots for slightly sick, mobile reserve hospitals, and mobile rest stations, as may be assigned from the line of communications to the various divisions and corps.

The service of these latter medical field units differs from the service of similar units in other armies, inasmuch as they are not permanently attached to divisions and corps, but are field army units, and the Armee-Chef-Arzt of the field army determines the time, occasion, and manner of their being brought up and distributed to the various corps.

REGIMENTAL MEDICAL SERVICE.

The regimental medical personnel consists of officers of the medical officers' corps and a subordinate personnel consisting of noncommissioned officers and privates detailed from the regiment itself. The general principle is to attach one medical officer to each battalion or similar unit and to have two or more in addition with regimental headquarters. The total personnel for an infantry regiment consists of 7 medical officers, 16 medical assistants, 48 litter bearers and 6 pack carriers for medical supplies; total, 7 officers and 70 men.

THE DIVISIONAL MEDICAL UNIT.

One of these units is a part of each division. It is complex in character and has no counterpart in the medical service of other armies. It is intended to combine the functions of reserve medical supply, ambulance transport and the dressing-station service. It takes the place of the divisional sanitary train of our army, except there are no field hospitals and no litter-bearer sections.

The personnel of the infantry divisional unit consists of 6 officers of the medical officers' corps, 2 officers and 125 men of the sanitats truppe, and 77 men of the train troops. Its transportation consists of 145 horses and 38 vehicles. Each unit is divided into the following elements: (*a*) A supply section, for replenishing supplies expended by regimental detachments; (*b*) a slightly wounded section, to establish stations for slightly wounded; (*c*) a dressing-station section, to establish dressing stations; (*d*) an ambulance section, consisting of 15 ambulances, 4 of which are furnished by the Teutonic Order of Knighthood.

Divisional units for cavalry and for mountain warfare are generally similar to infantry division units, but with less personnel and transportation.

OTHER MEDICAL UNITS.

In support of the regimental detachments and the divisional medical units there are the mobile units belonging to the field army and assigned to divisions and corps as the need may arise. These units are field hospitals, field depots for slightly sick, mobile reserve hospitals, and depots of medical supplies. Materiel and units are also provided for field armies by volunteer aid societies and are distributed in a manner peculiar to Austria-Hungary. To nearly every medical unit of the regular army there is attached a supplemental unit furnished by organized volunteer aid.

FIELD HOSPITALS.

These are army units, but are mobilized in the proportion of three to each division of which the army is composed. Each field hospital has a capacity of 200 bed patients. Its personnel consists of 3 medical officers, 1 chaplain, 1 pharmacist, 1 officer and about 60 men of the hospital corps, and about 40 men of the train troops. It has 17 vehicles, including 1 rolling kitchen.

Attached to each field hospital is a wounded transport column of the Red Cross Society. This column is equipped with five two-horse ambulances and is commanded by a Red Cross Society's delegate.

LINES OF COMMUNICATION—MOBILE RESERVE HOSPITALS.

These hospitals are similar in purpose to the evacuation hospitals of the French and of our own service. They are provided in the proportion of six to each corps, and each accommodates 200 patients, with possible expansion. They are similar in equipment to field hospitals, but have no transport assigned them, being required to obtain locally vehicles necessary for transportation of their equipment. Three of these hospitals for each corps are organized on mobilization and the others held in storage in the advance depot until needed.

The personnel for these hospitals is obtained from the reserve medical personnel held on lines of communication and is similar to that of field hospitals.

FIELD DEPOTS FOR SLIGHTLY SICK.

Field depots for slightly sick are provided in the proportion of three to each corps; one is usually mobilized and two held in storage. The personnel consists of 2 medical officers and 1 officer and 30 men of the army medical corps. They usually take care of about 500 slightly sick and wounded.

REST STATIONS.

These stations are either mobile or stationary, and are located where required on lines of travel. They are usually under the charge of civilian personnel.

FIELD MEDICAL SUPPLY DEPOT.

One supply depot is organized for each field army, but it is composed of a number of army corps units, each with personnel and matériel enabling it to be attached to an army corps and act as an independent unit. These corps units, in addition to stores for replenishing medical matériel expended in the field, contain reserve matériel for three mobile reserve hospitals, two field depots for slightly sick, two mobile rest stations, and matériel for improvising two hospital trains.

HOSPITAL TRAINS.

Hospital trains are constructed out of ordinary freight trains on mobilization. The personnel of a hospital train is 2 medical officers, 1 pharmacist, and 34 noncommissioned officers and men of the medi-

cal corps. Six specially built hospital trains were maintained in time of peace by the Knights of the Sovereign Order of Malta.

MOBILE LABORATORIES.

Twenty complete laboratories, capable of being moved from place to place, have been organized and are in use in the sanitary service on lines of communication.

SURGICAL DETACHMENTS.

Some 50 "surgical detachments" have been organized to furnish the operating staff of corps hospitals. Each detachment consists of two or three eminent civilian surgeons and four specially trained surgical nurses and is furnished with adequate surgical instruments and supplies.

The function of these detachments is to provide a freely movable unit of expert surgeons which may be readily assigned to hospitals on lines of communication or home territory when their services are needed.

ZONE OF THE INTERIOR.

There are no distinctive features of the medical service in this zone. Austria utilizes her material and her medical personnel in the same way as other countries in Europe.

V. ITALY.

PEACE ESTABLISHMENT.

Military service in Italy comprises (a) that in the standing army; (b) that in the mobile militia; and (c) that in the territorial militia.

Every adult male between the ages of 20 and 39 years is liable to service in one of these branches.

Examinations are made annually of all men reaching military age, and as the result of these examinations men are assigned as follows:

(a) A sufficient number of men are assigned to the standing army to maintain it at peace strength. Men so assigned serve two years with the colors and are then placed on furlough for six years. At the end of the furlough period they pass into the mobile militia, or first reserve, where they serve for four years. At the end of this service they pass to the territorial militia, or second reserve, where they remain until their thirty-ninth year.

(b) Men physically fit but in excess of the number required to fill the ranks of the standing army are not required to do service with the colors, but are placed immediately upon furlough for eight years,

at the end of which period they pass to the mobile militia and territorial militia in the same way as do men who have served with the colors.

(c) Men who are exempt by law for family reasons from serving with the active army are enlisted directly into the territorial militia, where they remain until their thirty-ninth year.

(d) Men specially qualified by reason of education and position and who volunteer for service are allowed to serve one year with the colors and are then placed on permanent furlough as underofficers, or reserve officers. From this class a number of medical officers are drawn in time of war.

The standing army is divided into 12 army corps, each with a definite territorial area. The total strength of this army (budget 1912) was 252,340.

GENERAL ORGANIZATION OF MEDICAL SERVICE.

The medical service is composed of the following elements: (a) Officers of the army medical corps; (b) pharmacist officials; (c) administration and other officers and officials; (d) enlisted men belonging to combatant units; (e) enlisted men in the medical corps; (f) nursing sisters.

UFFICIALI MEDICI DI CORPS SANITARIO (OFFICERS OF THE MEDICAL CORPS).

Officers of the medical corps are divided into two classes: (a) Those on continuous active service (*ufficiali medici di carriera*); (b) those on permanent furlough (*ufficiali medici in congedo*).

The latter are in turn subdivided into four classes:

(a) *Ufficiali medici di complemento*.—These are a kind of special reserve. According to their years of service, they may be on permanent furlough from the standing army or on the lists of the mobile militia.

(b) *Ufficiali medici di milizia territoriali*.—These are medical men who have completed their service in the mobile militia or who have been passed directly into the territorial militia.

(c) *Auxiliary medical officers*.—These are medical officers who have been relieved from the active army but are capable of performing special duties.

(d) *Reserve medical officers*.—These are officers di complemento who have passed the age of 39 years.

In these four classes of the *ufficiali medici in congedo* Italy is able practically to have her whole medical profession enrolled for war service.

The titles, rank, and number of medical officers in active service are:

Title.	Rank.	Number.
Tenente generale medico.....	Lieutenant general.....	1
Maggiare generale medico.....	Major general.....	3
Colonelli medico.....	Colonel.....	26
Tenente colonelli medico.....	Lieutenant colonel.....	36
Maggiare medico.....	Major.....	113
Capitano medico.....	Captain.....	314
Tenente medico.....	Lieutenant.....	274
Total.....		767

PHARMACISTS.

Pharmacists are appointed from university graduates in pharmacy. They have relative but not actual rank. The grades and titles of those in permanent service are:

Grade and title.	Relative rank.	Number.
Chimico farmacista inspectore.....	Colonel.....	1
Chimico farmacista direttore.....	Lieutenant colonel.....	1
Farmacista capo di prima classe.....	Major.....	14
Farmacista capo di seconda classe.....	Captain.....	20
Farmacista di prima classe.....	do.....	30
Farmacista di prima classe.....	Lieutenant.....	30
Total.....		96

In addition to the above permanent personnel there are on duty at all times with the standing army about 30 "Farmacista di complemento di 3a classe." Men in this grade (relative rank of second lieutenant) are obtained from students of pharmacy who are doing their period of service with the colors and who have passed an examination entitling them to this grade. After passing into the reserve these men form a large body of men available for pharmacist service in war.

ADMINISTRATION OFFICERS.

Officers and officials belonging to the services of administration, pay, and accounts are detailed for service in the medical department. Their services are similar to those of administration and supply services in other continental armies.

ENLISTED PERSONNEL.

The enlisted personnel for the medical service consists of two parts—(a) the regimental medical service (derived from combatant units); (b) the hospital medical service (men enlisted directly into the army medical corps).

The regimental medical service consists of noncommissioned officers called "medical assistants" and litter bearers recruited from amongst the soldiers of the unit with which they do duty. Medical assistants

go through a course of two months' instruction in the military hospital of the division to which their regiment belongs and are then employed as assistants to the medical officer in the regimental infirmary. There is one "medical assistant" to each regiment in time of peace, but the number is increased to six in time of war by utilizing men who have passed into the reserve.

Each year two men per company of nonmounted units are selected to go through a course of three months' instruction as litter bearers under the medical officer of the unit. They do general duty in the regimental infirmary in peace and, after passing into the reserve, supply, on mobilization, the litter bearers of field medical units in time of war.

The hospital medical service is performed by the subordinate ranks of the medical corps. Its personnel consists of warrant officers, noncommissioned officers, and men recruited directly into the corps at the time of the annual levies. The strength of enlisted personnel, medical corps, 1912, was 3,729. These men are organized into 12 companies, one for each army corps. The headquarters of each company is at the military hospital at army corps headquarters, detachments being distributed to other hospitals and medical establishments within the command. There is no fixed establishment for each company, the establishment depending upon the number of medical units in the army corps. The number is restricted, however, as much of the general work in hospitals is done by men attached to the medical companies from combatant units. These attached men are called "aggregati." They do not remain permanently with the companies but are replaced by others from time to time.

NURSING SISTERS.

There is no recognized service of nursing sisters in the Italian Army, but sisters of the order of St. Vincent de Paul are employed in the larger military hospitals.

GENERAL DISTRIBUTION OF PERSONNEL.

The technical administration of the medical service is vested in an Inspectorate of Medical Services at the war office in Rome. This body has no administrative power but acts as a consultative or advisory medical board. The details of army medical organization as a whole are in the hands of a medical officer attached to the general staff at army headquarters, while the more direct administration and command are vested in the general officers commanding army corps and their principal medical officers. At each corps headquarters there is a Principal Medical Officer (colonel), with one captain and one official of administration as assistants. The remainder of the

medical officers are distributed to military hospitals and other establishments and to regiments. The senior medical officer of the larger hospitals is a colonel or lieutenant colonel, and under him there are usually one or two lieutenant colonels, six majors, and seven or eight captains.

Pharmacist officials are distributed to the various hospitals, the larger hospitals having usually three.

Each regiment in peace has a regimental infirmary under charge of the regimental surgeon and one assistant. The enlisted personnel consists of a "medical assistant" and litter bearers from the regiment.

Where several regiments together form a small garrison a "garrison hospital" is established. These hospitals correspond to the post hospitals at our larger posts. A major, medical corps, is in command, with the medical officers of the regiments as assistants. The enlisted personnel is derived from the regiments and supplemented by men of the army medical corps.

Principal hospitals, corresponding to our general hospitals, are established at each corps headquarters and with one division headquarters, so that there are two general hospitals to each corps. The personnel for these hospitals is supplied from the medical corps and the "aggregati." A chaplain is appointed to each general hospital.

WAR ORGANIZATION.

The field army is the grand unit of organization in the Italian service. Each field army is composed of three corps, one division of cavalry and auxiliary troops. At each field army headquarters is a Director of Medical Services (surgeon general). For military purposes he belongs to the administrative staff. He has direct military as well as technical command of all medical units in the zone of field operations and lines of communication. As assistants he has 4 captains and 4 lieutenants, medical corps, 4 pharmacists, 2 clerks, 2 orderlies, and 11 servants. He has also a transport detachment of 3 noncommissioned officers and 15 men of the artillery train. He is responsible for keeping the medical service in the advance supplied with personnel and matériel and for the transportation and distribution of the sick and wounded. He cooperates for this purpose with the Director of transport and the Director of lines of communication.

Each corps has a Principal Medical Officer (colonel) with one assistant (captain), a clerk, orderly, and two servants. He coordinates the medical services and directs the movements of the corps medical units.

Each division has a Principal Medical Officer, with one lieutenant as assistant, and one enlisted clerk. He is directly under the chief of staff of the division.

MEDICAL SERVICE WITH COMBATANT UNITS.

The medical personnel for each combatant unit is augmented in time of war by officers from the "complement" and men from the reserve. That for an infantry regiment is 7 medical officers (1 captain, 6 lieutenants) and 30 enlisted men from the regiment (6 medical assistants and 24 litter bearers).

That for a cavalry regiment consists of 3 medical officers and 2 enlisted "assistants."

Smaller units, such as engineer companies, batteries of artillery, etc., have 1 medical officer and 1 enlisted man.

MEDICAL FIELD UNITS.

The medical field units consist of ambulance companies, assigned to both divisions and corps; and field hospitals, assigned to corps. There are also reserve field hospitals, assigned to the field armies.

AMBULANCE COMPANIES.

Ambulance companies establish dressing stations and send out litter squads to evacuate wounded from the combatant units. Their organization is in general the same, with slight modifications to fit them for service with infantry, with cavalry, and with mountain troops. The personnel of an ambulance company for duty with infantry is 6 medical officers, a quartermaster, chaplain, and 228 noncommissioned officers and privates, medical corps, with a transport personnel attached from the artillery train of 1 officer and 31 noncommissioned officers and privates. Its transportation consists of 3 carts, 2 wagons, and 8 ambulances.

The mountain ambulance company has the same medical personnel, with 1 officer and 60 enlisted men for transport. It has 30 pack mules in addition to the transportation provided for the infantry ambulance company.

The cavalry ambulance company is a smaller unit, with only 3 medical officers, a quartermaster, chaplain, 32 noncommissioned officers and privates, medical corps, and 13 enlisted men for transport. Its transportation consists of 1 cart, 1 wagon, and 4 ambulances.

Ambulance companies are not organized in peace. Matériel for them is kept in storage at each corps headquarters, and in time of war they are mobilized under the direction of the Principal Medical Officer of the corps. Officers are secured from the various classes of officers, and enlisted men for these units are drawn from those available within the corps. One infantry ambulance company is organized for each division, and one reserve infantry ambulance company for each corps. A cavalry ambulance company is assigned to each

cavalry division, and a mountain ambulance company to each mountain force (7 Alpine battalions).

FIELD HOSPITALS.

Field hospitals are of three kinds: (*a*) 50-bed hospitals on wheeled transport; (*b*) 50-bed hospitals on pack transport; (*c*) 100-bed hospitals.

Fifty-bed hospitals are army corps units in the proportion of 8 to each corps. One hundred-bed hospitals are field army units. Each field army has 12 hospitals. The personnel of a 50-bed hospital consists of 3 medical officers, 1 quartermaster, 1 pharmacist, 1 chaplain, 29 noncommissioned officers and privates, medical corps, and 1 noncommissioned officer and 6 privates for transport personnel. Its transportation consists of 3 wagons. The 50-bed hospitals with pack transportation have an additional sergeant and 35 additional privates in the transport section. Its transportation is 30 pack mules. The personnel of the field army hospital (100 beds) consists of 6 medical officers, 1 quartermaster, 1 pharmacist, 1 chaplain, 26 enlisted men, medical corps, and 7 enlisted men for transport. Its transportation consists of 4 carts and 1 wagon.

LINES OF COMMUNICATION.

The medical service on lines of communication is under the direction of the Director of Medical Services for the field army. There is no Principal Medical Officer for lines of communication as in other armies. Aside from the medical supply depots and the field hospitals belonging to the field army, there are no fixed medical formations, the general scheme being to establish hospitals and rest stations as occasion demands. For the evacuation hospitals or clearing stations at the railhead common to other armies, the Italian medical service utilizes the field hospitals held in reserve. There is also no definite transport unit for evacuation of the wounded to the railhead. This work is done by the intendency department as required. Nearly all medical work on lines of communication and in home territory is performed by personnel from the territorial militia and from that furnished by volunteer aid societies. Of these latter, two are officially recognized as part of the Italian Army. They are the Italian Red Cross Society and the Military Sovereign Order of Malta. These societies, and especially the Red Cross, are organized to supply an appreciable part of the medical personnel and supplies required by war. The Red Cross keeps ready and is prepared to furnish 64 mountain ambulance companies, 47 war hospitals, 14 hospital trains, 2 equipments for hospital ships, and 65 rest stations. In addition

to these units on hand, similar units may be organized in unlimited numbers, and it is upon these units that entire dependence is placed in time of war for service on the line of communication. They all come under the control of the field army Medical Director, but each unit is commanded and operated by Red Cross personnel.

HOME TERRITORY.

For patients sent to home territory, the military hospitals and convalescent depots maintained in peace are utilized, and, if necessary, enlarged. Many convalescent patients are also sent to their homes and paid 20 cents daily in lieu of rations. In addition to the regular military hospitals, civil hospitals are placed at the disposal of the military authorities and new hospitals are organized by voluntary aid societies.

VI. RUSSIA.

PEACE ESTABLISHMENT.

All male Russian subjects, with the exception of the Mohammedan native Caucasian population and the population of a few Provinces, are liable to military service from the twenty-first to the forty-fourth year of age.

This service is divided into (*a*) that in the standing army and reserves, and (*b*) that in the Imperial Militia. At the annual levy the class of service to which a man is assigned is determined by lot.

Service in the standing army comprises 3 years with the colors and 15 years in the reserve for the infantry, and 4 years with the colors and 13 years in the reserve for the other arms. The reserve is divided into two classes. Service in the first class is for 7 years, and that in the second class for the remaining period of reserve service. Upon completion of service in the reserve men pass to the Imperial Militia, where they remain until they reach the age of 44.

All men not required in the standing army, and men who have completed their service in that army, form the Imperial Militia. Men engaged in certain occupations are exempt from service with the colors in time of peace and may, if they draw a number for the standing army, be passed immediately into the reserve. Medical men are so exempt.

Men may also volunteer for service with the colors, in which case they serve for one year and then pass to the reserve. Medical men, pharmacists, and veterinarians who so volunteer, if accepted, are allowed to serve as such.

The standing army is divided into 37 corps located in 13 military districts. The total peace strength of this army in 1912 was 1,284,000 officers and men.

The medical organization for the Russian Army, while following the same general lines, differs materially from those of other armies. From top to bottom there exists a system of dual control, the duties of medical officers being of a purely technical character, while the administrative duties are in the hands of line officers. In her field medical units, too, Russia, while providing a large enlisted personnel, has a commissioned personnel much smaller in proportion than that provided for similar units in other armies. Apparently this system of dual control and divided responsibility, together with an insufficient number of medical officers, has not proved satisfactory. A committee was appointed after the Russo-Japanese War, under the presidency of Gen. Trekov, of the line, who was Director of Hospitals in Kuropatkin's army, to consider questions of improving the medical service, and as a result of the recommendations of that committee, more authority has now been given medical officers in the matter of command, but there is still a great portion of the medical service in which this complicated system exists and the medical field units are still underofficered.

Another improvement in the medical service resulting from the recommendations of this committee was the passing of a law in 1913 giving military rank to medical officers. Heretofore they had been merely military officials in various grades, but without actual rank. The actual rank they now hold is the same as that of officers of the line. There are no brigadier generals and no majors in the Russian Army, and hence medical officers are commissioned in the medical corps in the various grades of lieutenant general, major general, colonel, lieutenant colonel, captain, and lieutenant.

The law authorizing the giving of commissioned rank is very broad and does not specify any definite numbers for each rank nor for the whole corps. It provides generally that certain positions shall carry with them certain ranks and that medical officers occupying these positions shall be given rank commensurate with the position irrespective of the number of medical officers holding similar rank.

Promotion is entirely by selection and is largely in the hands of the Director General of the army medical department. Appointments of officers to positions carrying with them the higher ranks are made by the Minister of War upon the recommendation of the Director General, but in positions carrying with them lower rank, the Director General has the power to appoint or transfer officers. He also has the authority to retire at will officers occupying such positions.

The whole of the strictly medical service is under the direction of the Director General of the medical department, which is a bureau of the war department. He has the rank of lieutenant general and is *ex officio* a member of the chief military sanitary committee of the war office. This committee, besides the Director General of the medical services, consists of the Chief of Staff, Chief of Engineers, and Chief of the Intendance. The committee supervises the entire operation of the medical department.

To each military district there is assigned a District Medical Inspector with rank of lieutenant general and an Assistant District Medical Inspector with rank of major general. When troops in the district are mobilized the District Medical Inspector becomes the Principal Medical Officer of the field army formed from the troops in the district and the Assistant District Inspector takes over his duties in the district.

On the headquarters staff of each corps, division, or separate brigade there is a Chief Surgeon. The new law provides that one-third of the total number of Corps Surgeons shall have the rank of lieutenant general and two-thirds of those surgeons shall have the rank of major general. It also provides that one-third of the Division Surgeons shall be major generals and two-thirds colonels. The rank of the Chief Surgeon of a separate brigade is also that of colonel.

Fortress troops are distinct from troops of the mobile army, and with each fortress there is also a Chief Surgeon with rank of major general or colonel.

With each infantry regiment there is one regimental surgeon, and with each infantry battalion or similar unit there is one junior medical officer. The new law provides that one-third of the senior regimental surgeons shall have the rank of colonel and that two-thirds of them shall have the rank of lieutenant colonel. The junior regimental medical officers rank as captains or lieutenants. The total number of medical officers of all ranks holding permanent commissions in the standing army is 3,758. (Budget, 1913.)

The subordinate medical personnel is divided into two main classes: (a) That belonging directly to the medical department and (b) that belonging to combatant units, but doing duty with the medical department.

The subordinate personnel belonging directly to the medical department comprises (a) *feldshers*, (b) *nad zirateli*.

FELDSHERS.

Feldshers are a peculiar element in the medical service. They are, in effect, partially trained medical men who have not received a degree in medicine, and correspond practically to the "Practicante" in Spanish countries.

They are divided into two classes: (a) Those who have received their medical training before entering the army and (b) those who have been trained in the army.

The first are permitted to practice medicine in civil life after completing their army service, but the second are not so permitted.

Feldshers of both classes serve as assistants to medical officers in military hospitals and with combatant units.

NADZIRATELI.

The nadzirateli are men specially trained in nursing and other hospital duties, and serve in both the large general hospitals and regimental hospitals. Those serving in the general hospitals usually rank as noncommissioned officers.

In addition to these two classes belonging directly to the medical department, noncommissioned officers and men belonging to the line are detached from combatant units for duty as hospital attendants and litter bearers. Hospital attendants from combatant units are detailed for duty under the medical department in regimental hospitals. Litter bearers are not detached from their units, but are classed as combatants. The number of men trained in the duties of litter bearers is sufficient to not only supply the numbers of bearers required by the regiment in war, but also to furnish the cadres for divisional bearer companies.

In addition to the enlisted personnel, officials corresponding to our civil-service men are employed for quartermaster duties, clerical duties, etc.

Each regiment is provided with a regimental hospital (lazaret) for use of the regimental sick. It is operated by the regimental medical personnel if no permanent hospital is available. If, however, a permanent military hospital is available, the regimental lazaret is not established, but is kept in storage and the regimental sick are treated in the "regimental receiving rooms" (infirmaries), the seriously sick being sent to the permanent hospitals.

When regiments are mobilized for field service their lazarets always accompany them and become part of the medical mobile units in the field army.

Distributed among the military districts are large permanent hospitals, varying in capacity from 150 to 800 beds. At the outbreak

of the present war there were 27 of these hospitals in Russia, with a total bed capacity of 15,221 beds. The general administration of permanent hospitals is under the direction of a line officer, and he commands all the personnel of the hospital. The strictly technical service is under the direction of a chief surgeon, with rank of colonel or lieutenant colonel, with a staff consisting of two or more senior medical officers with rank of lieutenant colonel and a number of junior medical officers with rank of captain and lieutenant. The enlisted personnel consists of feldshirs and nadzirateli from the regular medical service.

WAR ORGANIZATION.

The medical service of field armies is under the direction of either the Adjutant General of the field army or of a "Director of Medical Services," who is a lieutenant general of the line. Assisting him in the general administration of his office is an office director, also a line officer, whose duties are similar to those of a chief of staff. The administration of this office is divided into (a) the field military hospital department, (b) the field military medical department, (c) the field veterinary department, and (d) the department of voluntary aid.

At the head of the field military hospital department is the Field Inspector of Hospitals, a combatant officer with rank of lieutenant general. He is in command of all the medical units in the army except for their technical service. This latter is under the direction of the Field Medical Inspector with rank of lieutenant general in the medical corps. The department of voluntary aid has at its head a Commissioner of the Red Cross Society.

At each army corps headquarters there is also a line officer in charge of the general police, upon whom rests the responsibility of evacuating the wounded from the field units. For this purpose he arranges the necessary transportation and for additional men to be detached from combatant units when necessary to assist in collecting the wounded.

MEDICAL SERVICE WITH COMBATANT UNITS.

Each regiment is accompanied by its lazaret, and this forms the basis of the regimental service. Its personnel consists of 5 medical officers (1 lieutenant colonel in command), 21 feldshers, 1 nadziratel of the medical corps, and 128 litter bearers from the line.

The transportation consists of 1 wagon, 4 carts, and 4 ambulances.

MOBILE MEDICAL UNITS.

The mobile medical units assigned to each division are one divisional lazaret and two field hospitals.

THE DIVISIONAL LAZARET.

The unit is directly under the command of the Division Surgeon. Under him is one medical officer in charge of the dressing-station section and a line officer in charge of the bearer section and wheeled transportation. The function of the divisional lazaret is to form a main dressing station as a link between the regimental stations and the field hospitals.

The personnel of the dressing-station section comprises 4 medical officers, 1 officer of administration, 7 noncommissioned officers and 20 privates (medical corps), and 2 clerks. The personnel of the bearer section comprises 1 officer of administration, 1 clerk, 17 noncommissioned officers and 200 privates from line troops, and 2 noncommissioned officers and 37 drivers from transport troops; total, 6 officers, 3 clerks, 26 noncommissioned officers, and 257 privates.

The transportation consists of 8 ambulances, 16 wagons, and 3 carts.

FIELD HOSPITALS.

Field hospitals are provided in the proportion of eight to each division. Four of these are mobile hospitals and the other four are held in reserve on the line of communications. Of the four mobile hospitals two only are assigned to the divisional sanitary train and the other two are field-army units. Each field hospital has a capacity of 200 beds. The total number of beds in the eight field hospitals allowed for each division is sufficient to provide for 7.4 per cent of the total strength of the division. This is in addition to the beds in the regimental and divisional lazarets.

The personnel of a mobile field hospital comprises 4 medical officers, 1 pharmacist, 1 officer of administration, 1 chaplain, 16 noncommissioned officers, and 59 privates (medical corps), and 2 noncommissioned officers and 26 drivers, transport troops. In addition to the enlisted personnel, there are 4 clerks and 4 Sisters of Mercy. Total, 7 officers, 18 noncommissioned officers, and 85 privates, and 8 civilians. The transportation consists of 20 wagons, 4 carts, and 1 ambulance.

LINES OF COMMUNICATION—TRANSPORT COLUMNS.

For evacuating wounded from the front to the railhead, sick and wounded transport columns are organized as definite units in the proportion of 1 to each corps. The movements of these units is controlled by the Director of Medical Services for the field army and each hospital is commanded by an officer of the line. The personnel consists of 2 medical officers, 1 quartermaster, 7 noncommissioned

officers and 17 privates (medical corps), 3 noncommissioned officers and 68 drivers transport troops, 2 clerks, and 2 Sisters of Mercy. Total, 3 officers, 10 noncommissioned officers, 85 privates, and 4 civilians. The transportation consists of 27 ambulances, 7 wagons, 1 cart, and 1 rolling kitchen.

HOSPITAL TRAINS.

Hospital trains are made up from third-class passenger coaches and have a capacity of 250 patients. They are commanded by line officers and have a medical personnel of 2 officers and 45 attendants.

SANITARY DETACHMENTS.

Special sanitary detachments are organized in the proportion of 1 to each division and 1 to each corps. They are divided into (a) bacteriological columns and (b) disinfecting columns. They are under the command of the Director of Medical Services and are utilized where needed for special sanitary work. The personnel of a bacteriological column is 3 medical officers, 3 noncommissioned officers and 6 privates (medical corps), and 5 drivers (transport troops). For transportation it has 5 wagons.

The personnel of a disinfection column is 1 medical officer, 3 noncommissioned officers, 6 privates (medical corps), and 4 drivers (transport troops). Transportation, 4 wagons.

EVACUATION HOSPITALS.

There are no distinct evacuation hospitals or clearing stations at the head of the line of communications in the Russian service, but in each area where field armies are operating an "evacuation commission" is appointed, whose duty it is to arrange a classifying station, where wounded can be collected and their disposition determined, and to arrange rest stations, stationary hospitals, etc., on the line. This commission is a cumbersome body and is composed of a president (general officer), 1 assistant (line officer), 1 medical officer, and a delegate of the Red Cross Society.

HOME TERRITORY.

The general provisions for final disposition of sick and wounded in home territory are on similar lines to those of other nations, except that this disposition is under the direction of commissions similar in character to the commissions for evacuating the wounded on lines of communication. The commissions in home territory arrange hospital accommodations and distribute sick and wounded accordingly.

VII. JAPAN.

PEACE ESTABLISHMENT.

The military service is divided into—(a) the active army (Gueneki); (b) first reserve (Yobi); (c) second reserve (Kobi); (d) replacement troops (reserve of recruitment) (Hoju); (e) the national army, first and second parts (Kakurnin).

Service is obligatory on all males between the ages of 17 and 40. The period of service is regulated as follows:

Gueneki.—Three years, save for the infantry, where men pass the third year under the status of furlough, and in the train troops, where the service is but six months.

Yobi.—Comprising men coming from Gueneki; 4 years and 4 months.

Kobi.—Men from Kobi; 10 years.

Hoju.—Comprising men in excess of the needs of Gueneki; 12 years and 4 months.

Kakurnin, first part.—Two years and 8 months for men coming from Kobi and 7 years and 8 months for men coming from Hoju.

Kakurnin, second part.—All men between 17 and 40 not comprised in the preceding categories.

The active army is divided into 19 divisions and 19 reserve divisions. It is contemplated to gradually increase this army to 25 divisions, with a similar number of reserve divisions.

Each of these divisions occupies a military district and is complete in itself, not only as regards combatant troops, but as regards auxiliary troops, including the medical department.

The total peace strength of the active army is 235,500.

ORGANIZATION OF THE MEDICAL DEPARTMENT.

The medical department, both in peace and war, is organized largely along the lines of the German medical service.

COMMISSIONED OFFICERS.

The commissioned officers in the medical service consist of medical officers and apothecaries. The titles, ranks, and numbers of medical officers are:

Title.	Rank.	Number.
Director general (gun-i-cho).....	Lieutenant general....	2
Surgeon general (gun-i-kan).....	Major general.....	9
Senior surgeon, first class (itto-gun-i-sei).....	Colonel.....	23
Senior surgeon, second class (nito-gun-i-sei).....	Lieutenant colonel....	39
Senior surgeon, third class (santo-gun-i-sei).....	Major.....	125
Surgeon, first class (itto-gun-i).....	Captain.....	473
Surgeon, second class (nito-gun-i).....	First lieutenant.....	279
Surgeon, third class (santo-gun-i).....	Second lieutenant.....	281
Total.....		1,231

RESERVE MEDICAL OFFICERS.

In addition to the medical officers on permanent duty with the active army, there are always a large number of reserve medical officers available for service. These reserve medical officers are formed out of several elements.

(a) Medical officers retired from active service but who are able to perform certain services.

(b) Medical officers who were "one-year volunteers." These are men who, while medical students, were drafted to the colors, and whose service was limited to one year on condition that they enter the reserve as medical officers upon receiving their qualification.

(c) Reserve medical officers maintained by the Red Cross Society.

PHARMACISTS.

Pharmacists hold commissioned rank and comprise those serving with the active army and those serving in the reserve in the same way as medical officers. With the active army there are chief pharmacists (yaku-zai sei) to the number of 10 and pharmacist officers (yaku-zai kwan) to the number of 112; total in active service, 122.

ENLISTED PERSONNEL.

The enlisted personnel for medical service is selected from men who have passed the first year of their service in line organizations. These men, in the proportion of two per company, are detailed for medical service with their organization and receive training in their duties from medical officers serving with the organization. After a period of such training they are transferred to the garrison hospital at the headquarters of the division in which they are serving, and are there given a course in hospital training. When their hospital training is completed, they may be returned to their organizations as non-commissioned officers of the medical service or they may continue on duty as ward masters, clerks, etc., in hospitals. Eventually they pass to the reserve as reserves of the army medical service, and upon mobilization they are utilized to form the various medical field units.

The duties of nurses and hospital attendants in military hospitals are not performed by enlisted men. Such duties are performed by men who were not of sufficient physique to be enlisted. They are civil employees and are used largely in time of war in hospitals on lines of communication and in home territory.

ADMINISTRATION AND DISTRIBUTION OF PERSONNEL.

The general administration of the medical department is vested in a Director General, with the rank of lieutenant general, who is the head of the medical bureau of the war department.

In matters of general administration, decentralization is the keynote of the Japanese Army, and each division is almost autonomous. It is maintained complete in all its branches in time of peace so that it can be moved in its entirety in time of war and its place immediately taken by a reserve division. The medical department is no exception to this general rule.

At the headquarters of each division district there is a Chief Medical Officer, with rank of colonel, who is in direct charge of the medical personnel, hospitals, supply depots, etc., within his division.

There is also at each division district headquarters a garrison hospital to which all of the seriously sick of the division are sent. This hospital is under a Hospital Director, with rank of colonel or lieutenant colonel, and a considerable staff of medical officers. Attached to each division hospital is one pharmacist and one officer of the "intendence" in charge of supplies other than medical.

In time of war these garrison hospitals become the principal hospital of the division and all other hospitals, convalescent camps, etc., which are established within the division, become its branches and are under the control of the Hospital Director.

No hospitals are maintained by individual regiments. Dispensary treatment is given in those units and all sick requiring hospital treatment are sent to the garrison hospital. There is, however, a regimental medical service consisting of medical officers belonging to the medical corps and an enlisted personnel belonging to the regiment itself.

Japan is the only nation which maintains in peace a commissioned medical personnel with regiments and other combatant units larger than that provided for similar units in war. The regulation allowance for medical officers in peace is 10 to each regiment, while in war it is only 6 to each regiment. This unusual provision is made so as to have available medical officers trained in military duties for use in time of war with field medical units.

WAR ORGANIZATION.

In time of war two or more divisions (usually 3) are mobilized to form field armies. At the head of the medical services of all field armies is a Principal Medical Officer of field forces, with the rank of lieutenant general. His station is with the general staff at headquarters in Tokyo.

Each field army has a Principal Medical Officer, with rank of major general, on the staff of the field army commander, and there is a Principal Medical Officer, with rank of colonel, on the staff of the inspector general of lines of communication for each field army.

Each division has a Principal Medical Officer, with rank of colonel. All Principal Medical Officers, including those of divisions, have two medical officers as assistants and several enlisted men of the medical service as clerks.

DIVISIONAL MEDICAL SERVICE.

When a division is mobilized and joins a field army, the whole of its peace staff accompanies it into the field, and their place in the depot division is taken by officers of the reserve or from the retired list. The medical personnel accompanying the division is rearranged and augmented by personnel obtained from the reserve in order to form the field medical units authorized for each division in time of war.

MEDICAL SERVICE WITH COMBATANT UNITS.

Medical officers on duty with regiments have rank of captain or lieutenant. Each battalion of infantry has two medical officers, and similar units, such as a battery of artillery, have one medical officer. Thus a regiment of infantry (three battalions) has six medical officers; a regiment of artillery (three batteries) has three medical officers; a regiment of cavalry (two squadrons) has two medical officers; etc.

ENLISTED PERSONNEL.

In each regiment of infantry there is one senior noncommissioned officer and junior noncommissioned officers in the proportion of one to each company. In addition to these men who have been trained in the medical service, four men from each company are detailed as litter bearers. The total enlisted personnel for medical service in a regiment is 15 noncommissioned officers as medical assistants and 48 privates as litter bearers. In the smaller units, such as a battery of artillery, company of engineers, etc., there are no litter bearers, but one noncommissioned officer of the medical service is on duty with each medical officer.

FIELD MEDICAL UNITS.

The medical units with each division are one bearer battalion and six field hospitals.

BEARER BATTALIONS.

Bearer battalions are under the command of a major of the line, with an intendance officer attached. Each bearer battalion consists of—(a) two litter bearer companies; (b) a dressing station section.

Each litter bearer company is commanded by a captain of the line and is composed of 40 litter squads or 160 bearers, with an additional personnel for auxiliary services, such as drivers, cooks, etc.

The dressing station section consists of eight medical officers (two captains and six lieutenants), one apothecary, and senior and junior noncommissioned officers of the medical service as assistants to the medical officers. The exact number of such noncommissioned officers can not be ascertained.

FIELD HOSPITALS.

Field hospitals have a capacity of 200 bed cases each. During the Russo-Japanese War, however, field hospitals were frequently called on to take care of as many as 600 serious cases. Each field hospital is under command of a major surgeon, with five medical officers as assistants. Its personnel comprises, in addition, one apothecary, one intendance officer, 18 noncommissioned officers, and 90 privates.

LINES OF COMMUNICATION.

The medical establishments usual to lines of communication are maintained by the Japanese Army. The personnel for these establishments is largely derived from that furnished by the Red Cross Society and that procurable from among the civilian population. It is a fixed rule, however, that all of these establishments shall be under the command of a regular medical officer of experience.

The organization of several units on the lines of communication is peculiar to Japan. The usual evacuation or clearing hospitals at the head of lines of communication are replaced by "the reserve medical personnel."

RESERVE MEDICAL PERSONNEL.

These units are organized in the proportion of one to each division, to follow up the field hospitals during an action and establish stationary field hospitals at suitable points to relieve them. They also establish rest stations along the route of evacuation. Each unit is under command of a major, medical corps, with 12 other medical officers, 3 apothecaries and an enlisted personnel approximately three times that of a field hospital.

SICK AND WOUNDED TRANSPORT DETACHMENT.

One of these units is organized for each division. Its duty is to evacuate wounded from the field hospitals to the stationary field hospitals or to the railhead.

Each unit is commanded by a major from the retired or reserve list of the line. It has three medical officers and a small staff of noncommissioned officers and privates of the medical department. No provision is made for transport matériel or bearer personnel. The former is improvised or requisitioned and the latter organized out of local resources.

BASE HOSPITALS.

Base hospitals are established as necessary on lines of communication. There is no definite schedule for their personnel and equipment, but they are supplied from local resources or from the personnel of the Red Cross Society. Regular medical officers are in command of these hospitals, however. In conducting the medical service on lines of communication, it is the policy of Japan to utilize voluntary aid to the greatest extent. It is a fixed rule that all medical units, however, such as hospitals, hospital trains, hospital ships, etc., shall at all times be under the command or regular medical officers of experience.

HOME TERRITORY.

All of the sick and wounded that are sent to the home territory are treated in reserve hospitals. These reserve hospitals are simply the peace garrison hospitals at the headquarters of each division enlarged as the occasion demands. During the Russo-Japanese War many of these garrison hospitals were expanded to accommodate from 10,000 to 15,000 patients. These hospitals are under the command of the Hospital Director (colonel or lieutenant colonel) of the division district. Through subordinate commanders he directs the operations of all subsidiary hospitals, convalescent camps, etc. The necessary personnel for these reserve hospitals is derived from the depot divisional medical service, from the reserves, from the Red Cross Society and from available civilian sources.

SUMMARY.

Percentage of medical officers in permanent peace establishments.

Nation.	Per cent.	Remarks.
Japan.....	0.52	In addition to permanent personnel, there are on duty 96 officers from the reserve corps and 15 contract surgeons, making a total peace percentage of 0.54.
United States.....	.43	
England.....	.42	In addition to permanent personnel, there are on duty 65 officers from the retired list and 182 from the reserve list, making a total peace percentage of 0.53.
France.....	.36	All these countries having compulsory service, augment their permanent peace personnel by medical men doing their service with the colors.
Austria.....	.34	
Germany.....	.36	
Italy.....	.30	
Russia.....	.29	

Percentage of medical personnel for duty directly with troops as taken from tables of organization.

Nation.	Commis- sioned.	Enlisted.	Nation.	Commis- sioned.	Enlisted.
1. Japan.....	0.52	5.10	5. United States.....	0.42	3.80
2. France.....	.49	6.30	6. Italy.....	.40	3.20
3. Germany.....	.44	4.70	7. Russia.....	.33	7.00
4. Austria.....	.42	5.30	8. England.....	.26	6.50

A study of these figures shows that the percentage of medical personnel maintained by the United States is about the same as that of England, less than that of Japan and greater than that of continental countries where compulsory service exists.

It also shows that upon mobilization for war the entire medical personnel of the continental armies was not sufficient to complete the sanitary quota of the field armies; and that of Japan and the United States would be just sufficient, while England, by reason of the fact that she does not make such ample provision for her field forces as do other armies, had a slight surplus of medical personnel available for duty in administrative positions with volunteer forces and on lines of communications and home territory.

Experience has shown that the total number of sanitary personnel required for the various hospitals and other establishments on lines of communication and in the zone of the interior is even greater than that required for service directly with troops; and it has also shown that the higher administrative positions in these establishments, as well as with field arms composed of raw troops, should be under the direction of trained military surgeons.

In countries having compulsory service, and, consequently, a large reserve, it is the custom to detail regular medical officers from the

standing army for such administrative positions and to supply the deficiency so caused from the reserves.

In countries not having large reserves instantly available, it is necessary to maintain in time of peace a medical personnel sufficiently large to be capable of proper expansion and the proper absorption of untrained volunteer aid in time of war.

TRAINING OF FORCES OF BELLIGERENT NATIONS OF EUROPE

PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES

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TRAINING OF FORCES OF BELLIGERENT NATIONS OF EUROPE.

1. INFORMATION DESIRED.

In a memorandum dated November 15, 1915, the Chief of Staff directs that a brochure be submitted giving the following information:

The amount of training stated in terms of total number of hours given in time of peace for each arm and the technical troops of all the belligerent nations of Europe involved in the war, stating what additional training has been given during the progress of the war:

(a) To troops that had previously been trained; (b) to troops that had received no previous training.

The brochure should show, in case of the latter, the period of training experience in this war has shown to be necessary to obtain satisfactory results. Particular attention will be given to England's attempted solution of the problem of training volunteers after war had been declared, as their condition more nearly approximates our own than any other belligerent.

2. NATIONS INVOLVED.

The belligerent nations of Europe thus far (December, 1915) involved in the war are:

Austria-Hungary.

Belgium.

Bulgaria.

France.

Germany.

Great Britain.

Italy.

Montenegro.

Russia.

Servia.

Turkey.

3. INFORMATION AVAILABLE IS INCOMPLETE AND INDEFINITE.

The total number of hours of training prescribed or given in peace in the various arms of the armies of all the belligerent nations now at war is not a matter of record in the War College Division,

nor is such information available without correspondence. Training in the armies of the above countries, except that of Great Britain, is compulsory and is prescribed in years rather than hours. Such countries in this brochure will be treated separately from Great Britain. In some it is possible to ascertain the customary period of training each day during the six months devoted as a rule to training individuals and smaller units. The daily periods devoted to training during regimental, brigade, division, and grand maneuvers varies with the customs of each country, its climate, etc. In some reports troops of a certain arm are said to drill from — o'clock to — o'clock a. m., and — o'clock to — o'clock p. m., but such reported periods do not agree for the same arm of service and country in all reports, and it seems possible that they are not uniform for all organizations of the same arm, if, indeed, prescribed at all from army headquarters. For example, the military attaché, Paris, France, reporting on French cavalry, once wrote:

The matter of drill hours is left largely in the hands of subordinate commanding officers, except, of course, when the whole regiment drills together on days and at hours designated by the colonel commanding.

Later, an officer on duty with a French cavalry regiment reported that from October 1 to April 1 training was given daily, except Sundays and holidays, from 6 to 10 a. m. and 12.15 to 5 p. m., or 8¾ hours. He did not report hours employed during maneuvers of regiments, brigades, etc., April-September each year.

4. TRAINING IN COUNTRIES HAVING COMPULSORY SERVICE.

The following table, showing number of years' service in active army, approximate number of hours' training per year (assuming that all time available is utilized) for various arms and total training required of members of variously termed reserves, is as close an estimate of training in peace as can be made. While service is compulsory for all citizens, within certain ages and subject to certain exemptions, it is known that some enlisted men detailed on various duties of administration are excused from a portion or all training in certain countries. The approximate training represents that received by soldiers not thus detailed and excused:

Belligerent nations of Europe.	Years with active army.	Hours per day, except Sundays and holidays.	Total hours active army.	Reserve training.	Aggregate hours.
Austria-Hungary:					
Cavalry.....	3	8	7,200	11 weeks..	7,723
Horse artillery.....	3	6½	5,850	...do.....	6,279
Other artillery.....	2	6½	3,900	14 weeks..	4,446
Infantry.....	2	8	4,800	...do.....	5,472
Engineers.....	2	8	4,800	...do.....	5,472
Belgium:					
Cavalry.....	2	(1)	(1)	8 weeks..	(1)
Field artillery.....	1½	(1)	(1)	6 weeks..	(1)
Other artillery.....	1½	(1)	(1)	4 weeks..	(1)
Infantry.....	1½	(1)	(1)	...do.....	(1)
Engineers.....	1½	(1)	(1)	...do.....	(1)
Bulgaria:					
Cavalry.....	3	(1)	(1)	48 weeks..	(1)
Field artillery.....	3	(1)	(1)	...do.....	(1)
Other artillery.....	3	(1)	(1)	...do.....	(1)
Infantry.....	2	(1)	(1)	54 weeks..	(1)
Engineers.....	3	(1)	(1)	48 weeks..	(1)
France:					
Cavalry.....	3	8½	7,650	7 weeks..	8,014
Field artillery.....	3	8½	7,650	...do.....	8,014
Other artillery.....	3	8½	7,650	...do.....	8,014
Infantry.....	3	8½	7,650	...do.....	8,014
Engineers.....	3	8½	7,650	...do.....	8,014
Germany:					
Cavalry.....	3	9	8,100	8 weeks..	8,532
Horse artillery.....	3	9	8,100	...do.....	8,532
Other artillery.....	2	9	5,400	...do.....	5,832
Infantry.....	2	9	5,400	...do.....	5,832
Engineers.....	2	9	5,400	...do.....	5,832
Italy:					
Cavalry.....	2	(1)	(1)	(1)	(1)
Field artillery.....	2	(1)	(1)	(1)	(1)
Other artillery.....	2	(1)	(1)	(1)	(1)
Infantry.....	2	(1)	(1)	(1)	(1)
Engineers.....	2	(1)	(1)	(1)	(1)
Montenegro (militia system, 18 to 62 years of age):					
Artillery, recruit service.....	2	8?	1,200	330 days...	3,300
Other arms, recruit service.....	2	8?	800	...do.....	2,900
Russia:					
Cavalry and Cossacks.....	4	4	4,800	(1)	(1)
Horse artillery.....	4	4	4,800	(1)	(1)
Other artillery.....	3	4	3,600	(1)	(1)
Infantry.....	3	4	3,600	(1)	(1)
Engineers.....	4	4	3,600	(1)	(1)
Servia:					
Cavalry.....	2	(1)	(1)	(1)	(1)
Artillery.....	2	(1)	(1)	(1)	(1)
Infantry.....	1½	(1)	(1)	(1)	(1)
Turkey:					
Cavalry.....	3	(1)	(1)	(1)	(1)
Artillery.....	3	(1)	(1)	(1)	(1)
Infantry.....	2	(1)	(1)	(1)	(1)
Engineers.....	3	(1)	(1)	(1)	(1)

¹ No report.

Hours shown above represent the possible aggregate, not the average duration, of training. For reasons given in paragraph 3, the total hours are founded partially on estimates and, while approximately correct for some forces, are not reliable indices of training given to an entire army of any nation.

5. BRITISH REGULAR ARMY.

The land forces of the United Kingdom consisted (in peace) of the regular army and territorial army. Enlistment in each is still voluntary. Service in the regular army was for 12 years, with permission

to extend to 21 years. Of the original 12, the majority of men served 7 years with the colors and 5 in the army reserve. The regular army included a special reserve consisting of troops not permanently embodied in units of the regular army. As to training in the regular army—

The battalion commander is responsible that the company commanders are thoroughly instructed, and he supervises, but does not lay down, the methods which they employ to train their companies. The company commanders assisted by their subalterns and noncommissioned officers are directly responsible for the efficiency of the rank and file, and their advancement in the service depends on their success. Recruits after a course of three months' training at a depot should be sufficiently trained to take their places in the ranks of the company. * * *

No record is found of total hours' training prescribed for any branch of the regular army.

6. BRITISH TERRITORIAL ARMY (ESTABLISHED IN 1908).

Service in the territorial army was for four years. Such men received as training a fortnight in camp and a certain number of drills per year and a musketry course according to branch of the service.

Arms of the service.	Schedule of training (preliminary hours).	Territorial army (subsequent annual hours).	Total hours.
Yeomanry.....	40	10	50
Artillery.....	45	20	65
Engineers.....	40-45	10-15	50-60
Signal service.....	45	15	60
Infantry.....	40	10	50
Service corps.....	28	15	43
Medical corps.....	42	10	52

In addition: Recruits' course of musketry (preliminary) and annual course of musketry, and from 8 to 15 days of annual training in camp for each corps. Six hours per day devoted to training in camp.

7. BRITISH "NEW ARMY."

Between August and November, 1914, Parliament authorized an increase of the army of 2,000,000. As the territorial army is not obliged to serve abroad, this force is called the "new army."

In September, 1914, army orders prescribed for "*trained soldiers*;" i. e., those who had qualified in a recruit course of musketry, the course being fired after two months' service, the following training:

Same as recruits' fourth, fifth, and eighth weeks, at 36 hours each week individual, and also 20 hours' company and 16 hours' battalion training during first month. Later, these men were to have five weeks' company, two weeks' battalion, and two weeks' brigade training. In addition, a lecture (one hour 7 to 8 p. m.) daily.

Trained soldiers for home service were to receive the same training, utilizing 18 weeks instead of 13 weeks.

Recruits for service abroad were to have prescribed individual training in three months, and those for home service, in four months.

8. TRAINING EXTENDED TO SIX MONTHS.

Army orders of October, 1914, prescribed the following periods of training for the arms of service shown:

British new army.	Weeks of recruit training.	Hours per week.	Section. training.	Company or battery training.	Battalion or brigade training.	Division training.	Total hours.
Artillery.....	6	48	7	5	2	6	1,248
Engineers:							
Mounted.....	13	48	.....	2	7	4	1,248
Dismounted.....	10	48	.....	6	6	4	1,248
Infantry.....	10	48	.....	5	10	1	1,248

In addition lectures from two hours weekly to one hour daily were given on subjects such as the following:

Discipline; organization of expeditionary force; causes and history of the war; characteristics of hostile and allied armies; special duties of the arm receiving lectures; sanitation and health; the German Army, etc.

9. ADDITIONAL TRAINING DURING THE WAR.

Due to lack of authority for representatives of the United States Army to remain at the front with armies of belligerent nations, reports of steps taken to provide additional training during the war are few and incomplete.

10. ADDITIONAL TRAINING, GERMAN TROOPS.

A camp for recruit training was established at Beverloo, Belgium, for a course of eight weeks' training, especially in firing and combat exercises, following preliminary training at home stations. Capacity of camp, 2,500 animals, 25,000 men. Similar depots for increased training in essentials of the character of warfare experienced were established throughout Germany, the course at each being eight weeks. Men were trained to fire from trenches and trees, practicing concealment. They were trained in construction of types of trenches.

Cavalry of the German Army was trained to endure long marches rather than to charge, and to accustom horses to bivouac in the open rather than rely upon stabling.

Field artillery were trained in construction of trenches and concealment from aerial observation.

Aviators were taught better cooperation with field artillery.

Candidates for appointment as second lieutenant are given practical training at the recruit depots above referred to.

11. ADDITIONAL TRAINING, FRENCH TROOPS.

Independently of the student reserve officers, 200 noncommissioned officers of the active army were given special courses of training, April 6-May 31, 1915, at St. Cyr, Maixent, Joinville, and Fontainebleau, to qualify for appointment as second lieutenants.

It is impracticable to ascertain how much training during the war is given men forwarded from regimental depots to replace casualties, but most if not all such received training in former years. This number is very large. The Seventy-ninth and One hundred and thirty-first Infantry to June, 1915 (10 months of war), each received 13,000 men in all to maintain its effective strength of 3,000.

Imagine the result if such proportion of untrained volunteers join an American regiment in war!

It was soon developed that the reconnoissance service of cavalry was badly performed, infantry being surprised, as no warning was received from cavalry screen.

The marksmanship of infantry was poor, too little ammunition being allowed for instruction of recruits (120 rounds instead of 200 allowed in peace).

In September, 1915, the class, due in October, 1916, for compulsory service, assembled at depots for training.

During service at the front a French regiment of infantry or cavalry in the first line spends 3 days in trenches, 3 days in cantonment exposed to bombardment, and 6 days in quiet cantonment; then 12 days in the second line (reserve). Thus it has 3 days on the alert, 3 days in danger, and 18 days in security. Artillery, less tried by fire, are continually in action and not withdrawn to the rear for rest. Rest given infantry and cavalry is moral rather than physical. While in second line (12 days) a 15-kilometer march is had each day, and company, battalion, or regimental maneuvers. Bayonet fencing, throwing petards, reversing parapets of trenches, crawling, running, target practice, machine-gun practice, etc., utilize entire period in second line. One half the French Army drills while the other half guards the trenches.

French infantry is trained to organize and carry out the assault of three lines of trenches constructed in rear of their positions to

resemble the German trenches in their front and on terrain similar to that in their front. Men are trained to rush 100 kilometers and lunge at figures dressed as German soldiers in the trenches used for assault training.

12. ADDITIONAL TRAINING, CANADIAN TROOPS.

Although the Canadian contingent had had some training before sailing, the first expedition (31,250 men) was sent to camp at Salisbury Plain for six months' additional training. One regiment (Princess Patricia's) was given only two months in England and two months in France before being placed in the trenches in February, 1915. It was composed largely of men with previous service in the regular army or South Africa.

Other than this regiment the personnel and training of the Canadians is said to have been inferior to the territorial force.

The First Canadian Division was sent to France after four and one-half months' training at Salisbury Plain. The second division was not sent to France until September, 1915. These two divisions, with authorized strength of 40,000 men, have met heavy casualties, and as selected men are transferred to them to replace losses, it represents the strength which Canada can maintain in the field in view of preliminary training given in Canada and supplementary training in England and France before troops with no previous training can be safely employed at the front. Such strength was not reached at the front until after 14 months' of war.

13. BRITISH CADET SCHOOL IN THE FIELD.

In January, 1915, to replenish the corps of officers, sadly depleted since August, 1914, Field Marshal Sir John French, commander in chief of the British forces in the field, established a school for training officers at Blendecques near St. Omer, France. Cadets are selected from enlisted men of educational, physical, and moral qualities, who have been tested as good field soldiers in actual campaign. The course, which lasts one month, is one of demonstration and practice coupled with a minimum of theory. Each cadet passes 48 hours in the trenches and visits observation posts of a battery or group of batteries, submitting report of his tour. Machine-gun tactics is an important subject of instruction. Among others are range finding, siting and construction of trenches, sapping, sketching, night operations, use of rifle and hand grenades, cooperation of infantry, artillery, and engineers, etc. The capacity is 105 cadets, that number being graduated each month. Graduates have been favorably reported by divisional and corps commanders. The Artists' Rifles (twenty-eighth battalion, London regiment) was utilized as the basis for this training corps for officers in the field.

14. BRITISH MACHINE-GUN SCHOOL IN THE FIELD.

A school for training the increased personnel employed with machine guns, the number of which guns with field units was doubled, was established at Wisques, near St. Omer, France, under an enthusiastic musketry officer. The course, which lasts two weeks, consists of improvising positions and gun shelter, oblique or enfilade fire, firing from behind houses through openings in walls, or from within houses and cellars through openings in the roofs, firing from armored motor cars and aeroplanes, etc.

15. PRACTICAL EXPERIENCE FOR HIGHER UNIT COMMANDERS.

It is reported that regimental and battalion commanders of the expeditionary forces still training in Great Britain were sent to France in relays for a week's experience and training at the front, that on returning they might make the training of their proper commands more practical and appropriate to the service anticipated when such commands reach the front.

16. BRITISH CENTRAL TRAINING CAMP AT HAVRE.

In the summer of 1915 a camp was established near the base at Havre for the supplementary training of men arriving from England and considered deficient in the essentials of infantry training. All men passing the camp were subjected to "tests," and not permitted to go to the front until found proficient by the commandant, Maj. H. F. Whinney, Royal Fusiliers. Instructors are experienced officers and noncommissioned officers recently returned from active service in the trenches, some of them recuperating from wounds or sickness. In addition a very good officer is selected from each division at the front and detailed for a tour of two months as instructor. This maintains instruction in pace with the evolution of the peculiar conditions of warfare which characterize the struggle in France. The course includes musketry, entrenching, first aid, pack-saddlery, bayonet fencing, bombing, revetting, construction of obstacles, particularly barbed-wire entanglements, machine-gun practice, the disabling of guns, and conduct of artillery fire. Lectures and practical instruction are given groups of officers and men, at times to as many as 300 in a group or class. All are impressed with the idea that their lives may depend upon following the advice given. Subjects are so practical, and the necessity for knowledge is so vital, the hour so solemn, and lecturers men who have learned by wounds and bitter experience in action what to avoid, that there is no lack of interest or attention. In musketry targets represent German helmets barely visible over a parapet, bobbing up over a

front of several hundred yards. Men are taught the character of trees and houses in the landscape, so as readily to recognize aiming points and division lines between sectors. They are taught the distinction between cover from view and cover from fire. Trenches of patterns found best at the front are built, faced by trenches similar to those used by the Germans. Men under instruction occupy these trenches 24 hours to test their knowledge of what they have been taught in lectures. Men are taught to throw dummy bombs from a narrow fire trench into trenches in front and to advance in specified formations of small groups or squads, clearing "pockets" between traverses of any hostile occupants by "lobbing" bombs into such pockets. They are taught to hurl live bombs and shown how to avoid accidents, relieving men in fire trenches, formations for assault, bringing up supports, attacking "hostile" trenches occupied by dummy "Germans" which must be bayoneted or bombed, use of respirators to avoid effects of gas, positions taken in trenches when aeroplanes are sighted, use of trench sprayers to negative effects of gas that has been thrown by "Germans," are interesting and practical exercises undertaken. They represent the last word in practical infantry training for the character of warfare peculiar to the situation in northeastern France.

17. DEDUCTIONS.

(a) The time devoted in peace to training in all other countries exceeds that given all British forces, excepting possibly the British Regular Army, which constituted at the outbreak of the war the only British force fit for service on the Continent, and compared with strength of the new army was very small. It included many men of several years' training, reenlisted and professional soldiers, and its service in August and September, 1914, demonstrated the value of troops thoroughly trained and habituated to discipline. But its casualties, fighting against odds, were very heavy.

(b) All other British troops, excepting possibly those from Australia, required from six to nine months' training after organization, regardless of previous training, before they were considered fit for service at the front. No reports have been received to indicate whether Australian troops required more training than had been received under the compulsory training required by the defense act. It is probable that such additional training was necessary and was given in camps in Egypt before such troops were sent to the Dardanelles in the spring of 1915.

(c) Casualties in the ranks of units from countries having compulsory training were replaced by men of reserve forces, variously designated, who had had training in peace. Casualties in British

and Canadian units had to be replaced by men with no training in peace, and the preparation of such men required at least six months' intensive training in Great Britain, after which many were found unfit and were given supplementary training in France before joining units at the front.

(d) The proportion of the British regular and territorial forces to the population of Great Britain and Canada being greater than that of the Regular Army and Organized Militia of the United States to the population of the United States, a greater percentage of British citizens than of United States citizens had received some military training before the war commenced, and the amount of such training in the territorial forces was greater than in the Organized Militia of the United States.

18. APPLICATION TO SITUATION IN THE UNITED STATES.

(a) If imminence of war should warrant mobilization of the United States land forces, it is obvious that only the Regular Army and such of the Army reserve as have very recently served in the Regular Army can be considered ready at once for active field service against a force from any country now at war, including the British New Army thus far sent to the Continent.

(b) The United States has now no adequate method of supplying properly trained men to replace casualties in the ranks of the Regular Army or to compose the ranks of the large number of combatant units required in addition to the existing mobile regular troops to resist invasion.

(c) The experience of the British with the new army confirms the estimate in paragraph 42 of A Statement of a Proper Military Policy (W C D 9053-90) that—

Twelve months' intensive training is the minimum that will prepare troops for war service. Therefore the 500,000 partly trained troops above referred to require nine months' military training before war begins.

(d) Conditions of modern war do not afford time to train an army after war becomes imminent. Not only must material be secured, but personnel must be trained before military operations can be undertaken with any hope of success.

**STUDY ON
THE UTILIZATION OF OUR RESOURCES IN VARIOUS
MEANS OF TRANSPORTATION AND OF THE
SERVICES OF TRAINED SPECIALISTS**

**PREPARED BY THE WAR COLLEGE DIVISION, GENERAL STAFF CORPS
AS A SUPPLEMENT TO THE STATEMENT OF A PROPER MILITARY
POLICY FOR THE UNITED STATES**

WCD 9053-111

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STUDY ON THE UTILIZATION OF OUR RESOURCES IN VARIOUS MEANS OF TRANSPORTATION AND OF THE SERVICES OF TRAINED SPECIALISTS.

PRESENT STATUS.

1. *Motor transport.*—Automobiles can now be manufactured in the United States at the rate of over 50,000 per month, motor trucks at the rate of about 5,000 per month, and motorcycles at the rate of about 4,000 per month. There are now about 1,500,000 motor cars, 140,000 motor trucks, and 100,000 motorcycles in the United States. An army of 1,000,000 men might need about 4,000 motor cars, 4,000 motorcycles, and 24,000 motor trucks.

2. Only a small proportion of existing motor vehicles are suitable for military service, and in view of the small number of such vehicles required and the rapidity with which they can be manufactured, it would be neither economical nor wise to plan upon using any and all kinds of motors offered for service.

Accepting and using old motor vehicles of many different models when new ones of a few good models can be obtained as soon as needed would result in poor transportation and great cost for the United States. It is, therefore, not planned to use every vehicle that may be presented, but rather to accept individuals as chauffeurs and mechanics, and only such vehicles as may be of an approved type and serviceable. A bonus might encourage the accumulation of suitable types of motor vehicles, but it is not thought to be necessary.

3. The type of motor ambulance best suited for military use in this country is now under consideration by a board of Army medical officers. Few automobile ambulances suitable for military purposes are available at present, and most of them will probably continue to be needed by the cities, hospitals, etc., now using them.

Types of motor trucks and tractors for use in the other departments of the Army are under trial and study at the present time.

4. *Aircraft.*—No private aircraft suitable for military purposes are known to be available to the Federal Government at present. It is estimated that military aeroplanes can be manufactured in this country at the rate of about 200 per month. The few civilian aero pilots or mechanics available in this country will be commissioned

or enlisted, but only machines of approved types should be **taken** over; all others should be purchased new.

5. *Medical personnel*.—Civilian physicians, trained nurses, hospital attendants, pharmacists, laboratory workers, etc., who volunteer for military service may be utilized in certain positions in the Medical Department, which is attempting to improve the Medical Reserve Corps and to perfect organizations comprising all the necessary personnel of complete sanitary units in various localities. These units will be listed, kept track of, and used as far as possible in time of war.

6. *Ordnance personnel*.—Civilians suitable for employment in the Ordnance Department who volunteer for military service are to be utilized as officers, etc., in that department according to their qualifications. Information regarding this is contained in General Orders, No. 3, Office of the Chief of Ordnance, United States Army, August 25, 1913, and in War Department General Orders, No. 57, 1909, and No. 26, 1911.

7. *Signal Corps personnel*.—Civilian telegraphers, telephone operatives, aviators, etc., to be employed with the military forces are to be organized and used in that corps as men of similar qualifications are organized and employed in the regular Signal Corps, field and telegraph battalions, and aero squadrons. Other telegraph and telephone operatives working for military forces are to be organized, employed, and controlled about as they habitually are for their work in civil life.

8. *Engineer personnel*.—Volunteer civilian railroad builders and operators, bridge builders, civil, mechanical, and other engineers can now have their names placed on an eligible list (G. O., 57, 1909, as amended), and in time of war will be offered commissions as engineer staff officers or in engineer organizations. These organizations will be pioneer, ponton, or railway battalions or regiments wherein will be found need for specialists in all branches of engineering, in the various building trades and mechanic arts, and in the construction, operation, and maintenance of railways.

9. *Quartermaster personnel*.—Volunteer civilians having special training in handling transportation or knowledge of other quartermaster duties are to be organized and employed in the Quartermaster Corps in a manner similar to that described for the other departments. Individual experts can have their names placed on the eligible list. When volunteers are authorized, motor-truck companies, wagon companies, bakery companies, etc., will be organized, and the necessary number and class of experts will be commissioned in the Quartermaster Corps.

10. The foregoing are the plans of the various departments of the Army, but aside from the laws providing for the Medical Reserve

Corps and for the list of persons eligible for volunteer commissions there are no provisions of law that authorize any measures of preparedness along the lines indicated. Neither in the Medical Reserve Corps nor in the "List of eligibles" is there a dependable source of officers, for there is absolutely no assurance that any of them will respond when their services are required, nor is there any provision in the laws compelling them to do so.

WAR COLLEGE PLANS.

11. The War College Division recommends utilizing these great resources of the Nation in men and matériel in two ways: First, by forming the various units that make up divisions, and lines of communications, etc.; and, second, by commissioning individuals whose personal abilities make them desirable for planning in time of peace and for execution in time of war.

These two methods which require legislation are to be put into operation as follows:

(a) Organizations such as motor-truck companies, motor-cycle companies, motor-ambulance companies, etc., are to be provided for in a civilian force, organized and trained in time of peace, and for convenience called the continental army. They can be formed in such numbers as the law may authorize and the Secretary of War may direct.

(b) Individual experts will be provided for in an officers' reserve corps. It is proposed, in time of peace, to commission as reserve officers all kinds of experts from civil life in such numbers and proportions as the law may authorize and the Secretary of War may direct.

12. In connection with this subject it is submitted that without legislation authorizing this civilian army and the officers' reserve corps nothing can be done that is of the least value. Peace-time volunteer organizations, unsanctioned by law, can not be relied upon for use in time of war; they can be of value only when their members are legally bound to render military service to the United States for a fixed period and to serve in the armies in any war that may occur during that period if legally called upon to do so.

13. *Methods suggested.*—The following is an outline of how the War College Division plans to utilize the national resources heretofore discussed, if authority therefor can be obtained from Congress:

A. IN THE CONTINENTAL ARMY.

- (1) *Motor truck companies.* Organized and trained under the Quartermaster Corps. These will include chauffeurs, drivers, mechanicians, etc.
- (2) *General hospital units;*
- (3) *Base hospital units;*

(4) *Field hospital companies; and*

(5) *Ambulance companies.*

Organized and trained under the Medical Corps. These will include physicians, surgeons, pharmacists, hospital assistants, nurses, laboratory assistants, chauffeurs, drivers, mechanics, etc.

(6) *Field battalions, Signal Corps;*

(7) *Telegraph battalions, Signal Corps; and*

(8) *Aero squadrons.*

These will be organized and trained under the Signal Corps and will include telephone and telegraph engineers, wireless experts, and aero pilots, telephone, telegraph, and wireless operators, and mechanics, mechanics, chauffeurs, motorcycle men, etc.

(9) *Railway regiments.*

(10) *Engineer regiments.*

These will be organized and trained under the Corps of Engineers and will include railway officials and engineers, civil, mechanical, electrical, and other engineers; enginemen, firemen, conductors, brakemen, train dispatchers, signalmen, bridgemen, trackmen, machinists, and all other railway operatives. They will also include carpenters, blacksmiths, mechanics, draftsmen, surveyors, lithographers, etc.

B. IN THE OFFICERS' RESERVE CORPS. (A reserve of officers to replace casualties in organizations of the Regular, Continental, and Volunteer Armies.)

(1) *Quartermaster Corps.* Automobile engineers and experts, wagon and other vehicle experts, railway transportation experts.

(2) *Medical Corps.* Physicians, surgeons, chemists, dentists, hospital superintendents, laboratory experts, sanitary experts, etc.

(3) *Signal Corps.* Telephone, telegraph, and wireless engineers, aero pilots.

(4) *Corps of Engineers.* Civil, mechanical, electrical, and other engineers; railway officials, including experts in the operating, maintenance of way, bridges and buildings, signal, motive power, car building, car repairing, and other departments.

LEGISLATION.

14. The draft of a proposed bill to authorize a civilian force, called herein the Continental Army, will be submitted in the near future, if desired. It is now under preparation.

15. The draft of a proposed bill to authorize the officers' reserve corps was submitted in War College Division memorandum No. 9153-2, 1915.

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